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Editorial

If You Ask Us—

HARD candy production is unquestionably one of the most fascinat- phases of candy making. Simple in composition yet, structurally complex, the perfect product can only be produced through the coordination of scientific knowledge and manual skill. Striping and spinning, for example, when properly done are anything but the work of a novice. There is a technique possessed by the expert which comes only with years of practice.

The hard candy maker is master of a confection which appeals not alone to taste but to sight as well. Color, in itself, is spontaneous and universal in its appeal. What person does not invariably (and often quite unconsciously) respond to the stimulus of color? The very nature of hard candy makes it an ideal vehicle for color and, with the available pure food colors to choose from, limitless varieties of eye-arresting combinations are possible. Even the candy maker, whose æsthetic appreciation is but slightly aroused, should derive a thrill akin to that of the artist mixing his oils, as he strives for the delicate hues that add so much to the attractiveness of the hard candy assortment.

In the making of plastic goods and filled hard candies we enter a field in which the candy maker's chances for the application of his creative ability and originality are limited only by his ambition—and the restrictions of his employer. If permitted to use only chocolate scrap or peanut butter in his fillings, then his sphere is narrowed. But if no such limitations exist—his work can be conceivably most fascinating.

If we were destined to a life of candy making and were given our choice of one department over another in which to specialize, it wouldn't take us long to step into the hard candy room. However, after we had been there a while sweating over hot batches we might possibly change our ideas about its fascination and prefer an assignment to the chocolate dipping room—so there you are!

Southern jobbers voted the other day to adopt the slogan, "the candy business is always good wherever GOOD candy is appetizingly displayed and properly merchandised. Modestly, we acknowledge the compliment. The slogan will be gladly shared by its originator, THE CONFECTIONERY BUYER, *companion publication to* THE MANUFACTURING CONFECTIONER.

What! No Candy?

MORE than 1,500 grocers attended the convention of their national association at Dayton, Ohio, a few weeks ago. They showered much interest on a model grocery which someone had set up and which was "completely equipped from window lights to a ventilating fan at the rear door." Without wishing to antagonize anyone who aims at putting food merchandising on a higher plane, THE MANUFACTURING CONFECTIONER contends that the store was far from being a model one. There was no candy case in the store and consequently there was no candy.

Candy is but one of many commodities stocked and sold (at a margin of profit worthy of any grocer's notice) in practically every grocery store. Because of that the candy industry needs right now to begin taking notice of events like the Dayton convention of the National Association of Retail Grocers. It needs to be firm in insisting that candy be included in every

model store set up and that the best methods of offering it for sale be included. If the men to whom candy represents a livelihood aren't interested enough to do this, who under the sun will?

The strain on good-nature that this summer's heat has put on most of us ought to make the idea of going to school in a North-woods vacation setting for three weeks highly attractive. A school designed to introduce cost accountants in candy plants to the FAM cost system recently adopted by the N. C. A. will begin early next month. It ought to have a large attendance.

Exit Trick Sales Methods

ERAS of easy profit invariably breed extravagant habits in sales management. Good times usually bring with them an abundant faith in the ability of trick methods of selling to get and hold business, to open up new territories and to establish so-called leadership for a piece or a line of merchandise.

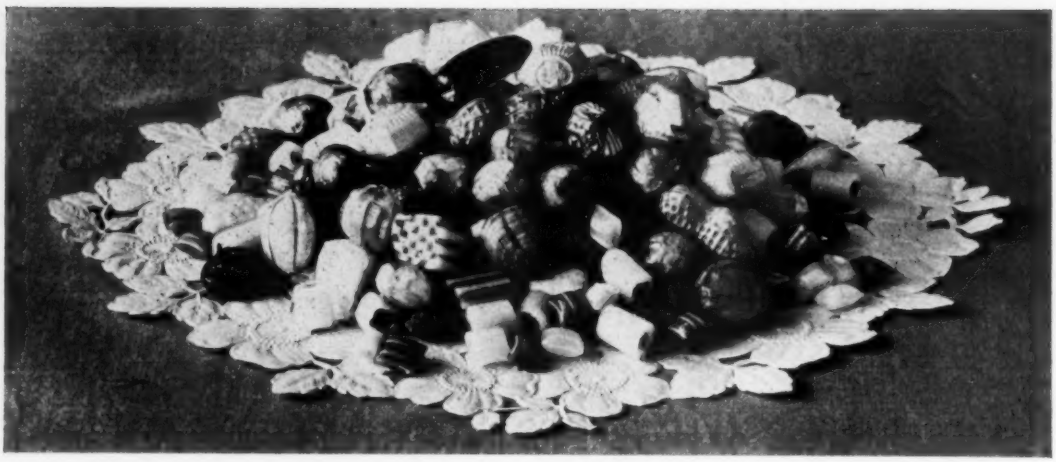
Perhaps that is why there is apparently less readiness today on the part of sales executives in the candy industry to put hard-earned dollars into the sort of circus selling-stunts that for a time threatened to become a hall mark of candy merchandising. Too many watchdogs of company budgets have substituted blue for rose-tinted lenses in their spectacles nowadays to release appropriations for gesture-making and stunting.

Every candy manufacturer who is producing merchandise of genuine intrinsic merit can discover understandable, logical, convincing reasons for the sale of his candy. What are those reasons? Put them before the trade and the consumer frequently and regularly by means of salesmen and the sort of advertising that has earned its right in the past to be considered a true economic force. That's selling. Obviously sampling has a place in the sales plan—the sort of sampling that costs only a minute fraction of the total sales cost and stops far short of putting its sponsor into competition with Ringling Brothers.

For the first six months of this year candy sales were only 3 per cent behind those for the first half of 1929. As they work their way upward past the record figures of 1929 (and they will) manufacturers should remember that it's not enough to keep a sharp eye on volume alone. It's profits that count. Probably everyone in the industry knows of companies that have sold millions of dollars worth of candy without making anything for their owners. Usually many things are wrong with such companies, but the chief weakness is apt to be a sales policy which believes that the way to sell candy is to give it away to the accompaniment of blaring trumpets and much shouting. Is the jazz era of candy marketing over? It will be when manufacturers realize that showmanship, though a part, is only a small part of salesmanship.

Time to Acknowledge a Service

HOW many candy manufacturers have any accurate conception of the extent and value of the work being done for the industry by the Foodstuffs Division of the Bureau of Foreign and Domestic Commerce? How many realize that in several ways more is being done for candy than for any other commodity? Instead of guessing as to how far or how fast the industry is moving every manufacturer now has the facts and figures covering the nation as a whole and each of its geographical divisions. Comparing his own progress in any section with the whole industry's progress he knows where he is doing a real job of marketing and where he needs to improve. This information readily gained from the record of confectionery sales sent out each month together with a cumulative record for the year including the current month is of interest and value, especially to those organizations which are live enough to analyze it and use it. Some sort of appreciation of this service by individual manufacturers would certainly not be out of place. More than that it might serve to insure the permanence of this flow of much-needed information.



Ironing Out the Kinks in Hard Candy Production

By H. D. LUCAS

TO HAVE a proper equilibrium of ingredients that will stand up under maximum temperature and humidity conditions and not grain or "go to soup"—that is the *ideal* to be attained in the production of hard candies. But *how* to obtain this perfect balance is a question. One manufacturer says the use of invert sugar will stop the graining, which is true. But how much invert sugar should be used? Is it not true that too much will produce a sticky product that will soon "go to soup"? Let us start at the foundation and build up.

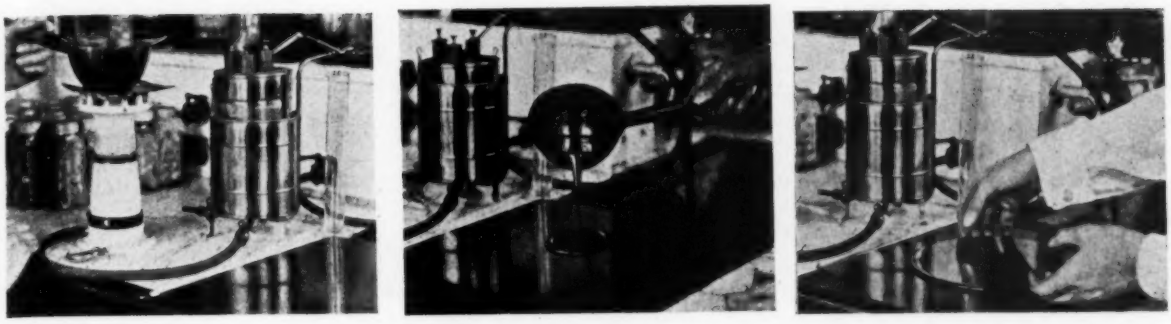
How shall we control our product? First, by careful selection of raw materials for use under our particular plant conditions. Where a laboratory is available, the chemist takes the sugars and tells us, after some tests, that one sugar is stronger than the others. He has obtained this information by means of a series of plaques made by cooking the sugars to a given temperature in a given time with controlled gas pressure. (The candy test for sugars was described in the January, 1927, issue of THE MANUFACTURING CONFECTIONER.) Then the "pH" is determined and possibly a titration is made "according to Molinari." (At this point we must stress the need for an accurate pH determination and we believe the electrical method, using the quinhydrone electrode, is the best for accuracy.) Shall we now take it for granted that everything is "all set"? Personally, I feel that only a start has been made, because there are so many variable factors in hard candy making, even a slight change in any one of which may affect our results. Let us also test our glucose for moisture, reducing sugars, pH, dextrines and ash. If we are going to use this source of non-crystallizing sugars, we should know which brand of glucose is the best for our particular purpose.

We Must Have Steam!

Let us next ascertain the steam pressure and boiler capacity of our plant and study our recording chart to determine how reliable the boilers are under heavy service. Perhaps we have only one hundred pounds of steam pressure and its use in other parts of the plant causes its constant fluctuation. Before we go a step further, let us revamp our system by a direct line to the hard candy department so that we will have a constant pressure at all times. Then we should install a gauge near the vacuum continuous cooker and ascertain what pressure decrease, if any, has occurred. Next, if possible, determine whether we can increase the pressure to one hundred and twenty-five pounds without overloading or endangering the boilers, for as we know—or should know—the longer it takes to cook a batch, the more inversion results and consequently the less glucose we can use, or, conversely, the more quickly we can turn out our batches, the more glucose we can use without "weakening" our product. Now we are ready to start production of our 70/30, 60/40, or 50/50 batches in the continuous cooker which will determine the desired results.

Now We're Ready

Taking our strongest sugar, we first use one brand of glucose that we have decided is the best, and cook a series of batches of the same size in a definite time under constant steam pressure. As soon as the batches are delivered, a small plaque is removed from each and moisture, total reducing sugars and "pH" are determined on them all. Knowing the amount of reducing sugars in our original glucose, and the amount of sugar taken, we can determine the proportion of sugar inverted during cooking. If this proportion varies too greatly we know that we have mechanical factors to contend



The chemist tests the strength of various sugars. He does this by means of a series of placques made by cooking the sugars to a given temperature in a given time with controlled gas pressure.

with. However, an experienced operator should turn out batches of greater uniformity than the chemist can in handling small quantities in the laboratory; at least, it is the condition of production that is the governing factor. Make a series of drops from these same batches, number and save. Using the same sugar, repeat this test with another brand of glucose which the foreman may think is better or, what is better still, try three or four different brands of glucose. After determining which glucose causes the least inversion of cane sugar during cooking, study its analysis and find out, if possible, why it is the best. Now we are ready to test different lots of sugar in the same manner, using the same brand of glucose.

Getting the Best Combination

Let us take all these various lots of drops, straight flavored and without acid, and weigh samples from each in numbered aluminum dishes. The samples are placed in desiccators containing diluted sulphuric acid of such density as to produce relative humidities of 70 and 90 per cent at a temperature of 80° F. (Table of suitable densities can be obtained from Carbohydrate Laboratory, U. S. Dept. of Agriculture.) Another series of drops is prepared from the best sugar and the best glucose with a varying proportion of acid as used for different flavors. At the end of a week the samples at 90 per cent relative humidity will give some interesting figures when the dishes are weighed, or weighings can be made daily and a curve plotted to show the speed of moisture absorption and breakdown. If the candy has grained, insufficient invert sugar was present, whereas if the candy "went to soup" too much invert sugar was present and you have the choice of either decreasing the proportion of glucose, thereby raising costs, or of using a buffer agent to counteract "natural pH" or added acid flavor. Inasmuch as a minimum grain is preferable to "soup," your final decision should be to select a composition producing this condition in drops after they have aged for a suitable length of time under high humidity conditions. Sodium acetate, U. S. P., is one of the most reliable buffer agents to use, if free running and not covered with a flour-like coating. The acetate should be kept in air-tight containers at all times until it is incorporated in the candy.

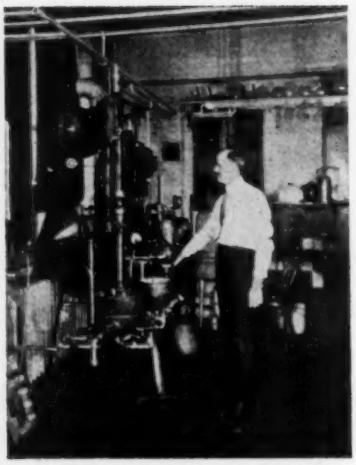
In using sodium acetate it is best to add the same amounts to all candies having the same acidities, the proper amounts to be determined by a stand-up test under humidity control, so that the product will show the minimum degree of graining due to moisture absorption and will exhibit no sticky surface during two months' observation at 70 per cent relative humidity, which is equivalent to about ten days at 90 per cent relative humidity. It is best to determine the proper proportions by using a fairly large piece of goods and adhere to the same proportions in smaller pieces. These may give trouble to a beginner in spinning by hardening before all is spun. However, an experienced man will quickly regulate his temperatures to permit 100 per cent delivery of goods where it is customary.

Samples of the various lots of drops are put in numbered aluminum dishes and these in turn are placed in desiccators producing relative humidities of 70 and 90 per cent at a temperature of 80° F.

The system of production that does not carry on the necessary research until the day it is needed reminds one of "the wise and the foolish virgins." Do this work during the spring, when weather permits, without air control in the plant. Other development work can be done later during the hot weather.

Why Some Batches Lack Uniformity

Your strongest sugar should generally be used in open-fire hard candy made with cream of tartar as inverting agent. However, regardless of materials and no matter how experienced the operator, uniform results cannot be expected with fluctuating gas and air pressure. Perhaps you have used your air pump continuously throughout the past season without so much as a cursory inspection of it. How can you expect mechanical equipment to operate continuously without some attention? Another thing, are all the kettles adjusted to the *same distance from the flame,* or does one kettle invariably come to a boil two minutes ahead of the others with the same gas and air pressure and same flame adjustment? If it does, the one batch will be scorched while the others will reach the desired temperature in good condition. Have you checked your thermometers against a certified Bureau of Standards thermometer? If not, do so.



Laboratory analyses and detailed reports of tests will aid in determining definitely the best raw materials and formulas for your particular conditions. For this work experienced laboratory supervision is essential.

The comparison may surprise you. Pure-sugar hard candy, as you probably see, is not as easily controlled a product as glucose mixtures!

Raw Material Specifications Essential

After what has been discussed above it can readily be understood how easily a price-buy might spell ruin to such a product. The only safe thing to do is to draw up specifications for all raw materials and then take advantage of price, provided you get what you specify. Do not rest assured that a test of the first shipment means that your year's supply will be of the same quality; check every shipment and *know*! Reputable houses will welcome specifications and, with their knowledge of the composition of these materials, will help you prepare them from a practical standpoint. During the past three years I have known three manufacturers of glucose to standardize their products for the better, as well as carry on intensive research on certain problems of their customers, thereby bringing their products to a par with those of one of the highest grade producers in the market; on the other hand, other houses still offer the same old glucose containing from 15 to 30 per cent moisture. We wonder which will survive!

Importance of Experienced Laboratory Supervision

The results from the humidity control tests combined with detailed records and laboratory analyses should furnish you with all necessary data to determine definitely what are the best raw materials and formulas to suit your particular conditions. You will find that these products give even better results under actual conditions than have been estimated under forced conditions in the laboratory. This has been demonstrated by experience. To obtain such results it can be appreciated that the knowledge of an experienced candy chemist is essential, and unless miracles are expected from an inexperienced chemist fresh from college, my advice is, providing you want immediate results, to pay for the experienced man and use the embryonic chemist as assistant.

Research properly conducted demands such close application that it ties up one man's time to an extent that he is not always available for emergencies; if one person does routine analytical and research work and also is required to meet the daily demands of the plant, satisfactory results will not be obtained in much under two or three years. Forget your curiosity of wanting to know what Tom, Dick and Harry are making; give your one experienced chemist a definite problem or problems that may be analogous and leave him alone until that work is satisfactorily completed. Then step on to the next problem. Remember, too, that this man's time is costing you money. If you already have some facts relating to the problems you have assigned him, don't hold them back. Give him the available data you have for what it is worth and he will be able to arrive at accurate conclusions in much less time than if he has to start out "from scratch."

Every hard candy department has a cheap line that is a quick seller in which scrap is utilized. Accumulated gum scrap is a hard nut to crack some times, but if you have a chemist who knows his raw materials and the use of harmless chemicals, that same gum scrap can be tamed for use in hard candy, fudge or fondant without having the rubbery characteristics of the starch when originally used.

If Possible Install Humidity Control

The up-to-date plant installs humidity control of the air in its entire plant. All plants, unfortunately, are not able to do this and must struggle along, working when the weather permits, pushing their production, paying overtime bonus wages, etc. Now it is well known that new help is not worth much for two months, leaving one month or so of actual value. If your plant is not a rambling accumulation of hit-or-miss additions, but is all confined in one compact location, you will save in the end by recapitalizing sufficiently to install air control throughout your plant, retaining and training a skeleton crew that can work every day, building up your stock during the off season so that when the heavy season begins you have sufficient leeway to do away with rush production and can handle increased demands by only a small addition to your working force. This will help morale, give you experienced year-around employees with greater loyalty, and allow you to pay better wages for more work from

(*Continued on page* 51)

For uniform results all equipment, from air pump to cooker, should be subjected to careful inspection periodically.

Courtesy National Equipment Co.

Making Hard Candy to an Ideal

By C. E. ROBERTS,
President, Imperial Candy Co., Seattle, Wash.

A FEW months ago an announcement appeared in the papers stating that the Imperial Candy Company of Seattle, Washington, had been awarded the Paris Exposition Gold Medal and Grand Prix on the merits of their Societe Brand Hard Candy. Some years back this Company also won the Alaska-Yukon-Pacific Gold Medal for this same brand of confection. Knowing the excellence of their hard candy, we wrote Mr. C. E. Roberts, President of the Imperial Company asking him to tell our readers "How they do it". Following is Mr. Roberts' answer:

The Alaska-Yukon-Pacific Exposition Gold Medal awarded 23 years ago.

THE methods of making good hard candy are no secret. True, there are certain elements of skill and training and "knack" involved, but the real basis is a selection of fine materials, modern equipment and the development of a personnel with pride in its work.

When our Societe Hard Candy was awarded the Grand Prix and Gold Medal at the Exposition Internationals at Paris we were naturally pleased—but we had already had better evidence of the merit of our hard candy from the fine consumer acceptance it has long enjoyed in the territories in which it is distributed.

In the making of Hard Candies we keep in mind three fundamental objectives that we find keep us alert to put forth our best efforts.

First, we never forget that our candy is made to be eaten—and that a large portion of it is going to be eaten by children. Therefore we are always studying the "taste" of our product. We are trying to get flavors that are delicate and mild. In our opinion many manufacturers take away from the taste of their product by using too much flavoring. Harsh, strong flavors do not, in our experience, appeal like the gentler, more subtle flavors. We seek, too, for out-of-the-ordinary flavors. Peppermint, raspberry and the other common flavors will always be popular, but we are great believers in adding to our mixed hard candies unusual flavors. People taste some new flavor and they are intrigued by it. "What is that?" they are constantly asking.

Because we believe in cleanliness and because children are large consumers of our product, we maintain scrupulous cleanliness in our hard candy department. Experience has definitely shown us that better candy is produced, and a better morale is maintained among the force, when clean conditions are rigidly enforced. The fact that our civic health department gives us a rating of 99¾ per cent for cleanliness and sanitation indicates very strongly the standard we set for ourselves. Maintaining a high standard in this direction naturally leads to a quality product. It would be out of keeping for us to maintain spotless kitchens to turn out a poor product.

As we have said, our candy is produced to be eaten. We know that the determining choice with us when we select a restaurant is the quality of the food, and that the quality of the food is largely determined by the quality of the raw materials. And so we buy raw materials by this standard—would we eat it ourselves—would we feed it to our children? Keeping in view the ultimate consumer of our confections forces on us the wisdom of making them good.

Second, we keep in mind the fact that a great deal of hard candy is consumed in entertaining—at teas, bridge parties and the like. As a result, appearance—the style element—enters in. For that reason we pay particular attention to obtaining a velvety surface texture—one that has life and lustre and yet is not too hard and shiny or glossy. If the candy is striped, twisted or molded, we aim to make uniformity and finished workmanship apparent in each piece.

We have paid particular attention to colors. The blends and shades possible with hard candy is a fascinating subject. No branch of the candy industry offers more opportunity for eye appeal—and we make every effort to make our finished product please the eye by delicate shading and richness of tone without gaudiness.

Third, we have remembered always that the candy we sell passes through retail channels, which means rail and water shipments with all the consequent handling, before our confections reach the consumer. Hence, we have made a careful study of proper packing. The way in which the jars and tins are filled—the protective padding that is used, and the careful protection given to the jars and tins in the packing cases all contribute to getting fragile candies such as hard candies into the retailers' hands in pleasing and saleable condition.

It is doubtful if we could tell anyone any new secret of hard candy making. The knowledge of methods is general information and it would be A-B-C material for candy experts if we should describe the actual steps in hard candy manufacture.

We have visited many plants and

(*Continued on page* 51)

Courtesy Vacuum Candy Machinery Co.

WITH the excellent equipment available and an enlarged knowledge of the various raw materials and their particular advantages and functions, the hard candy manufacturer has little excuse for turning out anything but quality goods. The illustration shows a small section of modern hard candy department, equipped with vacuum cookers.

Corn Syrup Characteristics That Influence Hard Candy Quality

By JOHN M. KRNO

Research Chemist, Corn Products Refining Co.

CORN syrup from a hard candy manufacturing standpoint is a raw material of the highest importance. In some types of hard candies as high as 50 per cent of corn syrup solids is used. Yet the product to most candy manufacturers remains as mysterious as ever. This is not strange since its composition from a chemical point of view is still a debatable question.

When a hard candy manufacturer obtains an analysis of corn syrup from a chemist he receives a long list of figures giving him moisture, reducing sugars content, dextrines, polarizing values, ash, acidity, hydrogen ion concentration, inverting power, color, protein and so on, practically ad infinitum. If the chemist wishes to be more impressive the reducing sugars are reported as part maltose, part dextrose, and attempts are even made to differentiate the various dextrines. In a way the chemist cannot help himself from being, let us say, complicated in his analytical report for he is dealing with an extremely complex product, a mixture of carbohydrates primarily. The available analytical methods for their estimation are not many and even these have serious objections from the standpoint of accuracy. So we are forced to make the best of our limited available knowledge and see what this signifies to the candy manufacturer, especially when applied to the making of hard candy.

Reasons for Using Corn Syrup

Why is corn syrup used in the making of hard candy? The primary reason is because of the effect of its constituents on the crystallization of sucrose. As a whole it is one of the most powerful repressants of crystallization of sucrose available to the hard candy manufacturer. There are two important factors that give corn syrup this position. The dextrines of the corn syrup retard the crystallization of sucrose. The reducing sugars play a role in this also. They increase the total solubility in the hard candy mixture and so lessen the danger of the sucrose graining.

The dextrines also give corn syrup its relatively high viscosity. As a candy maker would say, corn syrup gives "body" to his batch. If the dextrine content falls below normal he is apt to complain that "the corn syrup lacks body." This increase in the viscosity that it imparts also serves to retard sucrose crystallization. It is a well known fact

that above certain limits, which are prevalent in hard candy production, an increase in the viscosity lessens graining tendency. The increased viscosity due to the inclusion of the corn syrup allows the finished hard candy to retain its shape more easily, especially when high temperatures are encountered.

Dextrine Content Important

From the above discussion one must conclude that the total percentage of dextrines and its counterpart, the "purity"* or reducing sugars on dry basis, are important analytical figures to the hard candy manufacturer. The average "purity," which is defined in the trade as the reducing sugar's content figured as dextrose on dry basis, of commercial confectioners' corn syrup varies from 41.0 to 44.0 per cent.

A hard candy maker will ask, "Why not use a lower purity syrup and hence get the benefit of a greater dextrine content?" In working with a corn syrup having a purity low enough to yield a worthwhile beneficial effect on the hard candy, whether or not this is gauged by its apparent greater dryness, higher viscosity and less tendency to grain, several difficulties are encountered. The lower the purity the more likelihood is there of the corn syrup being cloudy due to the presence of the low-converted starch products. Such a corn syrup would yield a dull, slightly opaque hard candy. It could not be used where the utmost brilliancy and transparency are required.

Another factor to be considered in this connection is the increased viscosity of the corn syrup due to the lowering of the purity. It means a longer boil for the candy maker. Although the finished candy keeps its shape better at high temperatures when the syrup used is of low purity, the hard candy texture is more chewy and tough. It is not as short and brittle as when a corn syrup of higher purity is an ingredient. Some have even claimed to be able to distinguish such candies by taste, the one made with a low purity corn syrup being described as flat and suggestive of starch.

To most candy manufacturers the adoption of a low purity corn syrup for hard candy would mean the handling of two corn syrups, as the higher purity is considered more suitable for other types of candies. The handling of two corn syrups in most factories would be impractical. Years of experience have shown that a purity of 41.0 is the best suited to the candy maker.

Acidity, pH and Inverting Power

There is another group of figures usually furnished a candy maker by the chemist when he gives him an analysis of corn syrup which is of great importance. These are the acidity, usually reported as HCl, using phenolphthalein as an indicator, and the hydrogen ion concentration. This latter figure has been replaced by a logarithmic expression originated by Sorensen and denoted by the cabalistic appearing sign, pH. The inverting power of the corn syrup on the cane sugar and to some extent the color and so-called "ageing properties" of the corn syrup are coupled with the above mentioned quantity and intensity factors of acidity.

Before the advent of the resolution of the term "acidity" into the two components, acid quantity and acid intensity, the chemist determined only the time-honored acidity to the indicator phenolphthalein and figured it as HCl, since that was the mineral acid used for producing the corn syrup. We know now that the choice of phenolphthalein was not the best as a norm for actual acidity from the standpoint of absolute truth. Its color change, upon which the measurement depends, occurs at a point well above the theoretical neutrality. This means that for a corn syrup to be considered neutral from the viewpoint of the phenolphthalein acidity it actually has to be alkaline. It is possible to have the corn syrup noticeably above the neutral point and yet show an acidity by means of phenolphthalein. A much more ideal choice for an indi-

The action of corn syrup as a repressant of crystallization of sucrose (cane sugar) is the primary reason for its use in the manufacture of your hard candy.

*The word "purity" is an unfortunate choice of term, since it is not the purity of the syrup that is referred to, but the percentage of reducing sugars, calculated as dextrose, on dry basis.

cator would have been bromthymol-blue because its color change occurs practically at the theoretical neutral point. It yields a truer picture of the acid quantity.

Prior to the introduction of pH in the general analysis of candy materials it was known that two corn syrups could be produced having identical acidities when determined by the use of a single indicator such as phenolphthalein but had widely different cane sugar inverting powers. One would be considered suitable for hard candy manufacturers because it had low inverting power whereas, the other was totally unsuited. The determination of the pH of two such syrups shed considerable light on the difference in behavior towards the cane sugar. It was found that the intensity of the acids in the highly-inverting corn syrup was greater than in the other.

Inverting Power of Various Acids

Perhaps it would be of interest to compare the inverting power of the various more important acids. Ostwald has determined this and gives the following among others:

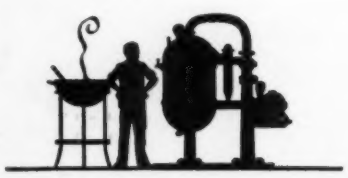
Kind of Acid	Inverting Power on Cane Sugar
Hydrochloric acid	100.0
Sulphuric acid	53.6
Phosphoric acid	6.21
Malonic acid	3.08
Citric acid	1.72
Malic acid	1.27
Lactic acid	1.07
Acetic acid	0.40

A study of this table discloses how it is possible to have two corn syrups having identical acidities and still be totally different as regards inverting power. The high inverting syrup which we have discussed in the preceding paragraphs must have had considerably more hydrochloric acid present than the low inverting syrup. The pH values will disclose this difference in behavior in most cases.

Inverting Power Not Synonymous with pH

One, however, should not fall into the error of considering the pH of a corn syrup, as ordinarily determined, as an exact measure in all cases of the syrup's inverting power. Two syrups may have the same pH and yet invert somewhat different amounts of cane sugar under apparently the same conditions. The term pH gives us the quantity of hydrogen ions which are the active agents of inversion. The more of these H+ ions that are produced from the acids present the greater is the action on the sucrose. However, the intensity of their action can be affected by the presence of other substances. They can be either slowed down or speeded up. It is possible for a corn syrup of higher pH, which means a smaller amount of active H+ ions, to do more inverting than one of lower pH or larger quantity of H+ ions. In the first case salts and other substances present may be of such a nature that they speed up the action of the smaller quantity of H+ ions to such an extent that a greater amount of cane sugar is inverted than in the second case, where there is a larger amount of H+ ions but which are not speeded up because of the nature of the other substances present.

Of still greater importance, probably, is the change in pH of a syrup when heated. Furthermore, two syrups having the same pH at ordinary temperature may in some cases have different pH values at the same elevated temperature. They would, therefore, have different inverting actions on cane sugar at the higher temperature. Unfortunately, the methods now generally available for measurement of pH can be used only at ordinary temperatures. Another factor of importance is the decrease in pH of a hard candy batch which occurs during the cooking of the batch. The rate of this decrease is influenced considerably by the presence of small amounts of salts and other substances. Since these substances, even though present in very small proportions, may vary from one corn syrup to another and also in different lots of cane sugar, it is seen that this may be another reason for difference in inverting action of two corn syrups having the same pH at ordinary temperature.



The above shows that the hard candy manufacturer is best served if his corn syrup is not only tested for the pH value but also for the cane sugar inverting power. The aim is to give a confectioner a corn syrup with as low a pH as is compatible with low inverting power. The reason for favoring the low pH syrup provided the inverting power is also low is that the development of color on heating is tied up to some extent with pH. In general, all other factors being equal, the higher the pH the greater the color development during the boiling which, of course, affects adversely the color of the finished hard candy.

Loyalty to One Source Repaid by Uniform Product

Why are the pH and inverting power of corn syrup so important to hard candy? If the syrup has a high inverting power the candy maker unknowingly is introducing an uncontrollable factor into his batch. A drier hard candy can be made when the invert sugar content is kept at a minimum. Invert sugar is more hygroscopic than either cane sugar or corn syrup and hence may cause stickiness. It also caramelizes very quickly and therefore its presence tends to increase the color of the finished candy.

The hard candy manufacturer should obtain a syrup from one source to insure uniformity on the above points. Some obtain their syrup from as many as three or four sources and then wonder why they cannot get their boils to yield them uniform results in making hard candy.

A pH of 4.8 to 5.0 is satisfactory for a corn syrup for hard candy manufacture if it is coupled with a lower cane sugar inverting power. The cane sugar inverting power is determined by preparing a laboratory batch of hard candy under standard conditions using the corn syrup in question. The amount of invert sugar produced is determined and compared with a set limit. This test is the most important that a chemist has for judging a particular corn syrup as to its suitability for hard candy manufacture.

Colors *for the* Confectioner

The Hard Candy Manufacturer, particularly relies upon color to enhance the appeal of his product. Confectioners in general, will be interested in this first of a series which deals with some of the interesting properties of food colors

Carbohydrate Division, Bureau of Chemistry and Soils, U. S. Department of Agriculture

THE large scale production of the coal tar or so-called aniline dyes during the last quarter of the past century was the means of offering mankind a new and larger source of dyes of a wider range of colors and shades than was possible formerly. The new dyes were more potent than their natural prototypes, and also it was possible to make them in purer form. The number of colors has by now been so greatly increased that it has become possible to reproduce practically every shade of the rainbow, not only on textiles but on many other products of industry. With the solution of the economic problems of their production on the large scale, the new dyes quickly drove the natural ones from the market with but one or two exceptions.

At first the use of the coal-tar dyes for coloring food was unrestrained. Some of these brilliant colors, however, are themselves poisonous, and practically all of them are made from intermediates such as carbolic acid, aniline, and other substances which are poisons and which may not be completely combined or eliminated in the ordinary manufacturing processes. Arsenic compounds are also often present in them with the other impurities. In dyes for textile purposes it is not feasible to attempt to remove these foreign substances completely. But such substances in dyes for use in foods are highly objectionable and should be eliminated as completely as possible.

Fifteen "Permitted Dyes"

The artificial colors were also sometimes used in food to cover up defects which, if not so concealed, would immediately proclaim the fact that the food was damaged, inferior in quality, or spoiled. This use of colors is really a form of fraud and as such is illegitimate. The passage of the Pure Food Laws in the early part of the present century gave the Federal and State Governments the necessary authority to suppress this deceptive use of color and led to the establishment of means whereby the harmlessness and purity of the dyes used for legitimate purposes might be established. Only those coal-tar dyes which are known beyond doubt to be harmless are permitted to be certified as food colors. Originally these dyes were seven in number and came to be known as the "permitted dyes." Since the first seven were listed eight more have been added, so that now there are fifteen of them, as listed below. Moreover, not only must the colors themselves be harmless, but each batch of them is examined for its purity and freedom from poisonous uncombined intermediates and adulterants, and if found acceptable is "certified" for use in foods.[1] With these measures in force for the protection of health, the popular prejudice against the use of artificial dyes for the coloring of foods has been almost completely eliminated.

List of Permitted Dyes, as Given in Service and Regulatory Announcement, Food and Drug No. 3, Supplement No. 2, Issued by the Department of Agriculture on September 17, 1929

Red Shades:
- Ponceau 3R
- Amaranth
- Erythrosine
- Ponceau SX

Orange Shade:
- Orange I

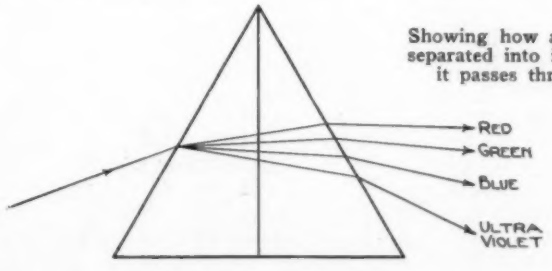
Yellow Shades:
- Naphthol Yellow S
- Tartrazine
- Yellow AB
- Yellow OB
- Sunset Yellow FCF

Green Shades:
- Guinea Green B
- Light Green SF Yellowish
- Fast Green FCF

Blue Shades:
- Indigotine
- Brilliant Blue FCF

Only Two Natural Colors Now Commonly Employed

The greater ease of using the permitted dyes, their greater coloring power and the greater clearness of their shades have made them of general use in coloring confections. Of the natural coloring matters only two are now commonly employed. Carmine has never been displaced because it is very difficult to reproduce exactly its characteristic crimson color by mixing any of the permitted dyes. Caramel has also sur-



Showing how a ray of white light is separated into its component parts as it passes through a glass prism.

[1] For complete information in regard to the standards and process of certification of food colors, address the Food, Drug and Insecticide Administration, U. S. Department of Agriculture, Washington, D. C.

The Spectrometer (or Spectrograph)—An instrument designed to break up a light ray into its constituent wave lengths and to provide a means of study of the spectrum thus formed.

Courtesy Bausch & Lomb Optical Co.

vived the introduction of its coal-tar competitors because it is so easily produced. Its flavor is also an added inducement for using it. Like that of carmine, its color is duplicated with difficulty. Only on rare occasions are any of the other natural dyes used and therefore they will not be considered here.

Two of the permitted colors, yellow AB and yellow OB, are insoluble in water but soluble in oils and hence are not used for coloring confections. The others are all very soluble in water. Their solubility is decreased markedly by salts; in some cases to such an extent that they may be almost completely removed from solution simply by the addition of common salt. Carmine is also soluble in water but not to so great an extent. Thus it is very easy to obtain a 1 per cent solution of any of the water soluble permitted dyes but impossible with carmine. The sodium salt of carmine is more soluble, but neutralization is not advisable except by an expert because the least excess of the soda used to neutralize the dye will be objectionable when introduced into the candy. Caramel is extremely soluble in water and yields powerfully colored concentrated solutions.

Analyzing Color

The property of the dyes of most interest to the confectioner is, of course, their color. The verbal definition of colors is extremely difficult because different individuals may have differing powers of judging and naming colors. While we may all agree that a certain color is red, we may differ as to whether it is raspberry red, mulberry red or possibly old rose. Similarly what one calls robin's egg blue another may call a green. For this reason and also because of the fact that, as seen from the list of the permitted water soluble dyes, there are four reds, three yellows, three greens and two blues, it is necessary to use some more exact means of defining the color. That means is conveniently found by direct comparison with the colors of the rainbow.

Everyone is familiar with the brilliant band of colors known as the rainbow and with the fact that a similar band of the same colors, called the spectrum, can be produced by passing light through a glass prism. Popularly there are seven colors in the rainbow or in the spectrum, namely, violet, indigo, blue, green, yellow, orange and red. As a matter of fact each of these seven colors is blended by imperceptible gradations into the next, so that there are really hundreds of colors instead of just seven. The spectral colors are produced by blending a ray of white light by means of some transparent object such as a prism of glass or drop of water. According to accepted theories, ordinary white light is made up of rays of all the spectral colors traveling together in wave formation, and when the light passes through and is bent by a prism, those rays of light having the longest wave lengths are bent the least and those having the shortest are bent the most. Thus the prism sorts out or analyzes the light according to wave lengths.

White Light the Sum of the Spectrum

The eye cannot analyze white light in this way but it registers different sensations for each different wave length of the visible spectrum and when it receives light of a definite wave length it reports a color sensation corresponding to that wave length. The eye, further, can detect the absence of light of any visible wave length, but since it is so constituted that it makes its reports to us as the sum of all the light it receives, we experience again a color sensation. In this case the sensation is that of the color which is the complement of that corresponding to the missing wave lengths. Thus, glass can be made so that it will stop those light waves having a length which correspond to green light. If we look through such a piece of glass, no green light gets through, but all the other colors are registered on the eye as the sum of the light it receives and we experience the sensation of red, which is the complement of green. We say the glass is red. Really it is white less green. The waves of the length corresponding to green have been screened from the light which came through the glass or have been absorbed by the pigment in the glass. Similarly, glass which we say is blue transmits all the light except that of the wave lengths for orange light, which is absorbed by the glass and so does not reach the eye.

Opaque Objects Absorb and Reflect Colors

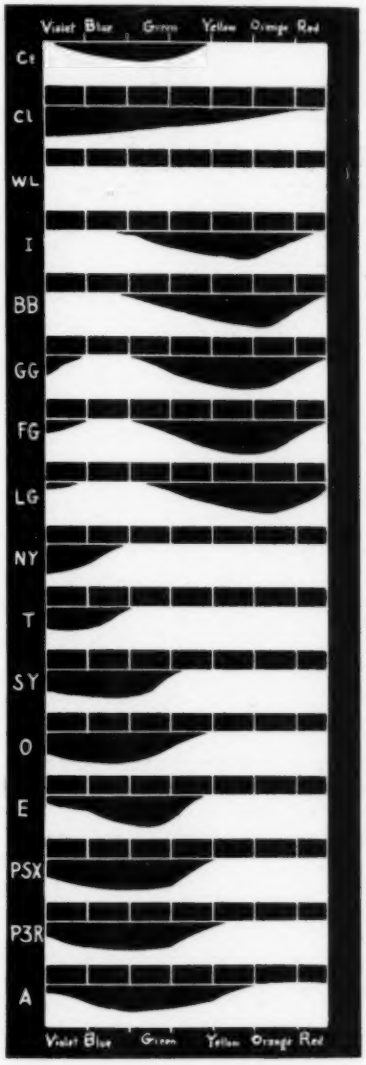
We see an object only when it sends or reflects light to the eye. An opaque object reflects light from its surfaces. If it is perfectly opaque and if white light falls on it, it will reflect all the light and will appear white. But very few objects are perfectly opaque. Light waves falling on them are able to penetrate a short distance before they are reflected back. Gold is ordinarily considered opaque, but if gold leaf is spread on glass, it is found to be transparent to light of a peculiar green color. Hence the surface layer of gold transmits this green light to the interior of its mass and reflects the rest, which produces the sensation of reddish yellow, the color by which gold is recognized. The colors of all opaque objects are thus due to the reflection of light from which some of the colored rays have been removed in passing through the transparent surface layer of the object. An object which absorbs light of all the visible wave lengths is black or gray, depending on the ratio of the amount of light absorbed to that reflected.

Colors Applied to Candy

Applying these basic principles to confections, it is seen that the color of candies is caused by the reflection of white light from which certain colors have been screened by the dye. It is possible to analyze the light reflected from them and it is found that certain parts of the spectrum are only partially reflected while other portions are completely reflected. A batch of fondant was prepared and a portion of it was placed in a cell with a glass cover. This served as the standard white. Small quantities of the same fondant were then colored deeply with each of the food dyes (except the oil soluble ones) and a portion of the colored fondant was placed in a similar cell. The ratio of fondant to dye was the same for all except the one colored with caramel, because the strength of the caramel used was not known. The cell containing the uncolored fondant and one containing a colored fondant were then placed in a color analyzer in such a manner that the light from a lamp was reflected from their surfaces and passed as two parallel rays, side by side, through a prism. The amount of light reflected from the colored fondant was then compared at appropriate wave lengths with the light from the white one. The accompanying chart was prepared from the data obtained in this way and shows the reflection spectra of the fondants colored with carmine, with caramel, and with each of the permitted dyes. It also shows the complete spectrum of the white light reflected from the uncolored fondant. The colors of the rainbow are indicated at top and bottom by their initials and the dyes are similarly indicated at the side.

The Chart Explained

In order to understand fully the meaning of these spectra and their light and dark areas, let us study in detail that of indigotine (I) in comparison with that of the uncolored fondant (WL). The latter, being white, and the standard for these spectra, reflects completely all the light of each wave length and so its spectrum is represented in black and white as a white band of uniform width extending from the violet to the red end of the spectrum. The width of this band of white represents, then, 100 per cent reflection of the light falling on the candy. The actual colors of this band are those of the rainbow and their locations are found by following the white upright lines to the top of the chart, where the initials of the six principal colors are found. In the spectrum of the fondant colored with indigotine we find that the violet and blue light are completely reflected and this is shown by the white portion, representing reflected light, extending the full width of the band to a point about half way between the blue and green. Here a little absorption is noted and the proportion of the light absorbed is represented by the width of the dark area. This dark area, commencing in the blue-green, gradually becomes wider and wider through the green and yellow portions of the spectrum almost as far as the orange, where it occupies approximately two-thirds of the width of the band. This illustrates graphically the gradually increasing amount of absorption of the colored rays until only about one-third of orange light is reflected. From this point of greatest darkness (actually, as well as in the illustration) the dark area rapidly decreases in width until it vanishes in the red portion, where once again we have 100 per cent reflection. Thus we see that the width of the white band at any point on the spectrum represents the actual percentage of the light of that color reflected from the candy. Nowhere is there complete absorption at any point since, as the experiments were carried out, there were always some sugar crystals in the fondant which were practically in contact with the glass covering it and which reflected white light from their surfaces. With this explanation of the reflection spectra in the chart we are now ready to interpret them in terms of the colors imparted to candy by each of the food dyes.



Studying the Spectra

Let us consider the artificial colors first. The first one, indigotine, shows greatest absorption in the yellow orange and greatest reflection in the violet, blue and extreme red. The color is indigo blue, which, as is well known, has a tinge of red. The next dye, brilliant blue FCF, has a narrower absorption band with the greatest absorption in the orange, which indicates a brighter blue than that of indigotine. The color of the fondant was a brilliant baby blue. When compared with that colored with indigotine, this fondant has more of a greenish tint, which would be expected from the fact that the region of its maximum reflection extends well into the green portion of the spectrum.

The next three spectra are those of guinea green B, fast green FCF, and light green SF yellowish. The first two of these are almost alike in color and spectra. While the maximum absorption of each is still in the orange, there is decided absorption in the blue violet so that the greatest reflection is only in the blue green, the color of these dyes. Light green SF yellowish, however, has both its maximum of absorption and greatest reflection farther toward the red end of the spectrum,

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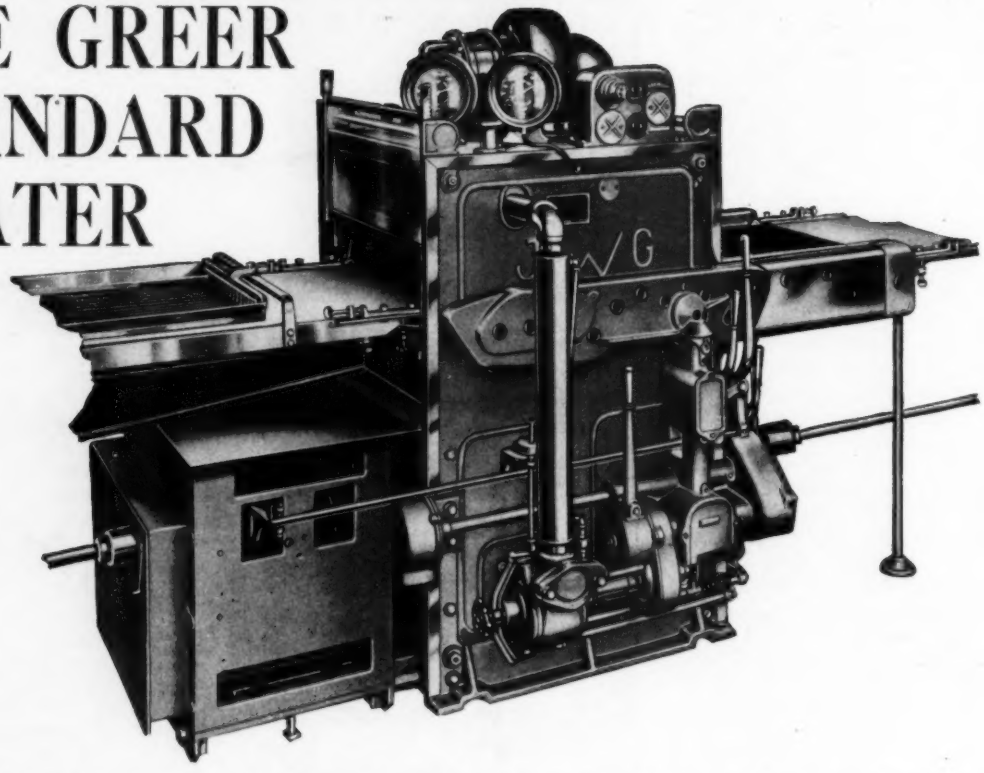

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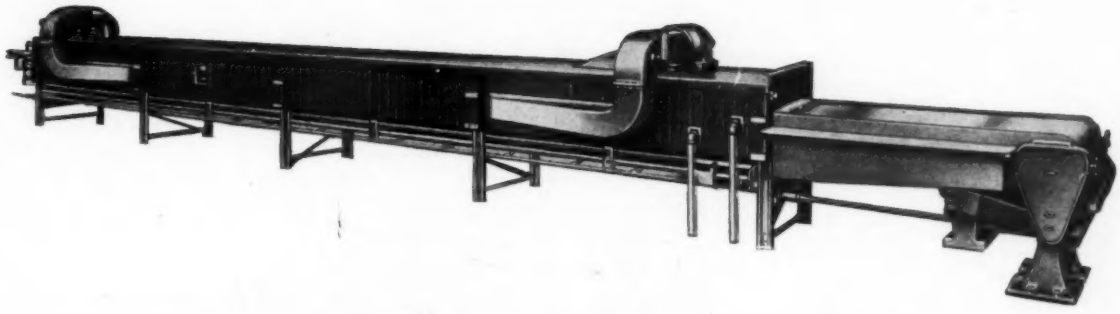

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Decorators
Chocolate Melting Kettles
(75 lb. to 5000 lb. Cap.)
Water Cooled Slabs (Steel or Castiron)
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Special Machines of many types

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and its color therefore is distinctly more yellowish than that of the other two greens.

The next three spectra are those of the yellow dyes, naphthol yellow S, tartrazine and sunset yellow FCF. Most of the absorption is in the violet and blue for naphthol yellow S, while practically all of the most brilliant part of the spectrum is perfectly reflected, which results in a very bright lemon yellow color. With tartrazine, the absorption is slightly farther into the blue and the color is a golden yellow without the greenish tint of naphthol yellow S. With sunset yellow FCF the absorption band reaches in the green and the color is an orange yellow.

The spectrum of orange I is of the same general nature as those of the yellows, but the absorption band extends still farther into the yellow green and the color is orange. The amount of light reflected from the yellow and orange candies is progressively less and their brightness and brilliancy falls off in proportion.

The remaining spectra are those of the fondants colored with the red dyes. The first one, erythrosine, has a narrow band of maximum absorption in the green and has a relatively small absorption in the blue and violet. The color is bright because so much light is reflected and is bluish red. The two ponceaus are practically alike in absorption and color. Since the absorption in the blue and violet is greater than that for erythrosine, the color has but little blue in it and is best described as tomato red. Amaranth, however, shows more absorption in the yellow than the other reds, and more reflection in the blue and violet than the ponceaus, resembling erythrosine in this respect. Amaranth is purplish red in color and is not brilliant but rather "muddy" because so much of the brilliant colors of the spectrum are absorbed.

Passing to the spectrum of carmine (Ce), we find a narrow, shallow area of absorption in the green. The color is a bright, brilliant crimson. Caramel (Cl) gives an entirely different type of spectrum. It is characterized by general absorption throughout, greatest in the violet and gradually lessening toward the red end of the spectrum, but nowhere showing a maximum. The spectrum is characteristic for the color brown.

Summing up, the color of any of the food dyes except caramel may be found from the reflection spectrum by noting the color which corresponds to the center of the band of maximum reflection and modifying it with the color at the opposite end of the spectrum when that color is more than 50 per cent reflected. The depth of the color will, of course, vary with the amount of the dye used if all other conditions are the same, but the characteristic color will be the same and the position in the spectrum of the regions of absorption will also be the same. The amount of light absorbed at each wave length will be greater with the deeper shades and less with the lighter ones.

The Coloring Power of Dyes

Another property of the dyes of interest to the confectioner is their intensity or coloring power. Most natural colors are weak in this respect, while the coal-tar dyes are powerful. Although their coloring power varies with the individual permitted dyes, it is so great that the relative variation is inappreciable as far as practical application is concerned. In the following table the coloring power of the food colors under discussion, with the exception of caramel, is given. In deriving this table, 1 gram of the dry dye was dissolved in water and made up to 100 cc. One cc. of this solution was then diluted to 100 cc. and 1 cc. of the second solution diluted again to 100 cc. This progressive dilution was continued until the solution showed the least visible trace of color when compared with water by looking lengthwise through Nessler tubes filled with the solutions. The final concentration was taken as the measure of the color intensity. Because of the practical difficulties of determining the concentration and purity of caramel this method cannot be used for this color. The ratios are subject to an error of from 1 to 2 parts, except where greater variation is indicated.

Table of Coloring Power of Food Dyes

Dye	Parts in 1 Billion Parts of Water
Amaranth	5
Ponceau 3R	1
Ponceau SX	10
Erythrosine	5
Orange I	6
Sunset Yellow FCF	25 to 30
Tartrazine	10 to 15
Naphthol Yellow S	20 to 25
Light Green SF Yellowish	2
Guinea Green B	1
Fast Green FCF	5
Brilliant Blue FCF	0.5
Indigotine	5
Carmine	50 to 100

From this table it is easily seen that the natural dye carmine is weaker in coloring power than the red coal-tar colors and will have to be used in approximately ten times the quantities of the latter to produce the same depth of shade, a result which is borne out by actual experience. The yellows are weaker than the reds, greens and blues because they absorb so little light, and that light is of the wave lengths which are least easily detected by the eye.

Fastness of Colors Vary

In regard to fastness, there is again a variability. No coloring matter, with the possible exception of lampblack, is completely fast to light. Most of the food dyes are reasonably fast if the colored confections are not exposed directly to full sunlight. Light green SF yellowish and indigotine are the two exceptions. The latter is very fugitive and a brief exposure to sunlight will fade delicate shades of the dye completely. For this reason the addition of the faster brilliant blue FCF to the permitted list is a distinct advance. Light green SF yellowish is less fugitive to light but is very sensitive to the smallest traces of reducing compounds. In view of the fact that a large proportion of the sugar produced contains very small quantities of such bleaching substances, the addition to the permitted list of the other two greens, which are not so easily bleached, is again a decided step forward.

In speaking of fastness, the dye chemist and the practical dyer recognize still other types of fastness. The fastness to acids is important to the confectioner, because hard candies even if made from neutral materials always develop a slight

acidity during the cooking although they may not be intentionally acidulated. Acids, even in the smallest concentrations, bleach the color of erythrosine to a very pale yellow. They remove this dye completely from aqueous solution, causing it to separate as a yellow solid. For this reason erythrosine is not suitable for coloring acid candies. The color of brilliant blue FCF is changed to a blue green similar to the color of guinea green by acids such as citric and tartaric and, therefore, this dye may be used for a green color instead of a blue one in acidulated candies.

Fastness to alkalies ordinarily does not have any importance to the confectioner, since alkalies are harmful to the sugars themselves and are practically never intentionally used. If the least trace of soda is present, however, orange I changes to a brilliant pink, sunset yellow FCF to a brownish red, and fast green FCF to a deep blue. These effects are always indicative that some soda or other alkali has in some way been introduced into the candy.

Increasing the Depth of Color

The type of candy may influence the shade of the color. It is common knowledge that the shade, that is, the depth of color, may be increased in one of two ways; either by increasing the concentration of the dye or by using the same concentration and increasing the thickness of the colored layer. Thus water in depths of not over a few inches is almost colorless, but in depths of several feet it has a bluish green color, due entirely to the greater absorption of the red rays of the spectrum in passing through the greater depths. The recognition of this fact will explain why it is that fondants and pulled hard candies are lighter in color than transparent candies made with the same relative proportions of dye and candy. In transparent candies, the light which penetrates the candy passes through the full depth of the colored material before it is reflected back to the eye and thus a small concentration of dye effects a relatively large amount of absorption and produces a proportionally greater color sensation. If, however, there is an obstruction inside the transparent candy to the passage of light rays, they are reflected back soon after entering, and before encountering much of the dye, and therefore are not so extensively absorbed. This is the case with fondants, which are composed of minute crystals of colorless sugar so small that most of the light falling on them is reflected from their surfaces. Here only the thin film of colored sirup on the surface of the crystals has any effect on the light. We get the same phenomenon if we pulverize colored glass. As the fineness of the powder increases the color becomes lighter and lighter until with extreme fineness it is practically white, because the depth of colored material through which the light has to pass before being reflected is so small that but little absorption can take place. Similarly, snow is white because of the the reflection of light from its many crystal surfaces, while ice is transparent and almost colorless; again, for the same reason, powdered sugar is white while rock candy is transparent and colorless. Consequently, in order to match the shade of a fondant to that of a transparent candy, the only recourse is to use more dye in the fondant.

Causes of Lightening

Not only do solid particles have this whitening effect, but bubbles of air in a substance will also lighten the color. The foam on beer, as may be remembered, is almost white although the beer itself is dark brown. Whipped white of egg is white and opaque because of the air beaten into the colorless transparent albumin. Pulling hard candy is nothing more nor less than working air into the body of the material. The incorporated air causes reflection of the light from the internal air-candy surfaces before it has traveled far enough through the colored films around the air bubbles to become deeply colored. If the pulling be carried too far, the color is so weakened that it appears faded and dull because the colored film has become too thin to effect much absorption.

Crystallization will also cause a lightening and deadening of the shade, as may be observed in hard candies which have crystallized and in fondants and icings which have dried out completely. The deadening effect is due to the loss of the smooth surface of the outer layer of sirup and the production of an optically rough one consisting wholly of dry, colorless sugar crystals mixed with dry minute dye particles from which the light is reflected in all directions without first passing through a smooth colored film. The difference is similar to the difference between flat and glossy paints wherein the gloss or "life" of the paint is to be attributed to a thin transparent smooth outer coating which causes directed surface reflection in addition to transmission of light to and through the colored material.

The art of coloring confections is really a combination of dyeing and painting. In dyeing the color penetrates the material uniformly, as in the coloring of hard candy and clear sirups. In painting the color is applied as a pigmented film to the surface of the object and does not color the whole mass uniformly. Pulled hard candy is thus a mass of air bubbles, painted with thick sirup, and fondant is a mass of sugar crystals similarly painted, for neither air bubbles nor sugar crystals are dyed by these food colors.

Acknowledgment

The author takes this occasion to thank Mr. J. Hamilton of the Carbohydrate Division, Bureau of Chemistry and Soils, for the preparation and the coloring of the fondant used in determining the reflection spectra of the dyes.

Production of Hard Candy

HARD candy began to be made sixty to seventy years ago. It developed through various stages and methods until batches of several hundred pounds were made, mostly by hand.

Fifty years ago the hard candy maker cooked not more than about forty pounds in a batch. Today as high as 4,000 pounds have been produced in a vacuum kettle at one cooking. Since it takes but 30 to 40 minutes per batch with such kettles, the vast increase in production can be readily computed, perhaps more readily than the profits therefrom.

A "MAPLE SUGAR PARTY" IN VERMONT—SCENE IN A FARMHOUSE.—Sketched

A SUGAR PARTY IN VERMONT.

THE famous sugar season in Vermont begins in the last of March, and usually it continues about four weeks. The farmers take turns in inviting their neighbors to a "sugaring-off," and, unmindful of the Governor's proclamation, these jolly festivals are often held on Fast Day, when the most interesting and fascinating of the population gather around the boiling sweetness and make merry while the hours slip away. It is estimated that the sugar-making season of New England does more to encourage marriage than almost any other industrial phenomenon in nature. We give a sketch of one of those parties.

In Ye Days of Yore . . . .

Above, we reprint an illustration and news item which appeared in an issue of "Frank Leslie's Illustrated Newspaper" dated April 25, 1874. In those days sugar, apparently, was credited with possessing a certain potency not generally recognized today.
While, below . . . . . .

HARD candy makers a century ago used standard and unpretentious recipes, according to an old candy book that recently came into the possession of Orville H. Kneen of the MANUFACTURING CONFECTIONER staff. It was published in 1824 and sold under the imposing title of "The Whole Art of Confectionary, Sugar Boiling, Iceing, Candying, Jelly Making, Etc."

All of these subjects, and kindred arts such as "How to Fine Ale or Any Other Malt Liquor After Thunder or Any Other Cause That Makes It Thick or Cloudy"; "How to Cure Ropy Beer or Ale"; How to Restore Stale or Hard Beer or Ale"; "To Bottle Porter," etc., Mr. Stavely covered in some sixty small pages of very large, well spaced type. He admitted that it would be found "Very beneficial to Ladies, Confectioners, Housekeepers, &c., particularly to such as have not a perfect knowledge of that Art."

Here are some of his hard candy recipes from which our readers may learn a thing or two:

TO MAKE TWIST

Put six pounds of loaf sugar into a pan with a pint and a half of water, boil it gradually for half an hour; when it is boiled enough, it will snap like glass, by putting the tube of a pipe into the pan, and then into water; after which it must be poured out on a smooth stone till cold; then take a part of that and pull it on a long nail till it becomes very white; then lap it over the other which is on the stone; and make it up, either for twist, or cut it into short lengths.

COMMON BARLEY SUGAR

Boil three pounds of coarse raw sugar in three tea-cupsful of water, over a slow fire, for half an hour. Dissolve a little gum in hot water and put it in to clear; keep scumming while any scum rises; when enough it will snap like glass; cut it into long sticks.

LOZENGES

Boil three pounds of raw sugar in one pint of water, for an hour, over a slow fire, skim it not; when boiled enough it will snap like glass, by trying it in cold water, then pour it on your stone. When cold, make it into long rolls, and cut it with a pair of scissors into small lumps, make them round and stamp them with a large seal or shape of a crown, made for that purpose.

Observe to drop a few drops of the oil of peppermint into your sugar when boiled and poured upon the stone; it will give it a strong taste and smell of peppermint.

TO MAKE SUGAR LOAF

Take six pounds of raw sugar, a little bullock's blood and water; boil it, and keep skimming till it is clear, and comes to a candy round the edges of the pan; then pour it into a mould in the shape of a sugar loaf; make strong lime water; and when the sugar is cold in the mould, pour the water over it.

Ironing Out the Kinks

(*Continued from page* 38)

the selected force as compared with smaller wages to more employees with no better production. A possible alternative, where air conditioning is not feasible, is to spin the hard candy without air control and convey it into your chocolate packing rooms for cooling and packing during hot weather or early season production.

Proper Packaging Completes the Picture

To complete our production problem properly some attention must be given to packaging. For a thorough understanding of requirements we should know the product's destination and obtain from the government weather bureau reports showing the general range of temperature and humidity in the territory covered by your distribution, thus finding out what you are up against in the way of adverse weather conditions. If your candy has been built to withstand maximum temperature and humidity conditions you have no worry. Still, you must keep in mind that it takes distribution longer to reach the public at a distance than it does locally, and that jobber shelf-life, etc., must be considered. Of course, the ideal solution is direct distribution to the consumer, but this is not always possible. Where glass containers are not used fairly air-tight paper packages will withstand high humidity conditions reasonably well and their efficiency may be tested in the same humidity control desiccator equipment used for the original hard candy tests. Your price is a governing factor in the style of package and you must accordingly be sure your package is suitable for delivering appealing goods to the consumer.

Education is a broad subject. It begins in your factory, must be carried to the jobber, retail merchant and finally to the consumer as well. The opportunities for progress in this direction are many and varied, and the word "finis" is never written except by those who fall by the wayside.

Sugar in Paradise

ONE of the earliest mentions of sugars occurs in Hindu mythology, where a story is told of a hermit who created sugar cane to be used as a heavenly food by a rajah who was given an early paradise.

The rajah wished to go to heaven during his lifetime, but the ruler of paradise declined to admit him. The hermit, to please his royal highness, created a paradise on earth for him. As so often happens, the heaven on earth did not last. When the rajah's paradise vanished, sugar cane alone was left in the world, as a memorial and a foretaste of what one may expect in the next world—if he has lived the right kind of life!

Flowers in Candy.

FLOWERS are used in confections in many parts of the world. Some very delicious candies are made of the delicate blossoms. One of the finest is the candied violet preserve, made on the Riviera. The petals are thrown by handfuls into a vessel containing boiling sugar. When the concoction has set in a brittle state it is chopped into small pieces and sold by the confectioners.

In China jasmine petals are candied by a process quite similiar to that used for violets in France.

The lotus is used in southern India to make a form of jelly or candy that is very popular with the natives. Europeans, however, do not dote on it. The petals are taken from the young flowers, steeped in well-sugared water, and then boiled until a very stiff paste is formed. After being powdered with sugar, the contents of the mold are left to set.

In the West Indies the blossom of the banana is made into a confection by the negroes. Both natives and whites find it very palatable.

Changes in Kantiko, Inc.

Kantiko, Inc., one of the Shattuck subsidiaries, which has succeeded the J. C. Shrinder Co. as a wholesale distributor of Schrafft's candies, has moved into larger quarters in the building at the corner of Washington and Park avenues, Brooklyn, where Wallace & Co., another new member of the Shattuck group, also has its factory and offices. The Kantiko offices and warehouse are both installed in this building.

Hyland Gunning has been elected president and general manager of Kantiko; Walter McNeill, vice-president in charge of sales, and A. M. Kelly, treasurer. They will fill these positions in addition to their duties as officers of Wallace & Co.

Kantiko, Inc., will act as wholesale distributors for the entire Schrafft line and also certain Wallace products for the New York metropolitan district, including Westchester county.

Pioneer Fruit Houses Combine

Of unusual interest to confectionery and ice cream manufacturers is the announcement of the combine of two of the oldest and best known houses in the fruit line—Henry H. Shufeldt & Company, of Peoria, Ill., and the Crown Fruit & Extract Company, Inc., of New York and California. The Shufeldt company has been a factor in Maraschino cherries and glace fruits for many years, that business being established in 1857, while for almost fifty years the Crown Fruit & Extract Company has been building a reputation for high quality and fair business dealings in ice cream fruits, cordial dipping fruits and other specialties popular with the ice cream, candy and soda fountain trade.

With the coming together of the Crown and Shufeldt companies, the new combination will largely control its own fruit growing and distributing facilities, extending from the strawberry section of the Pacific Coast, through the Middle West to the Atlantic Seaboard. Import connections, large modern plants, financial and special technical resources, will combine to make this organization one of the most economically operated and influential concerns in the fruit preserving field.

The new company is fortunate in retaining the services of Mr. G. E. McGowan and Mr. E. R. Jagenburg, through whose efforts the unifying of the Crown and Shufeldt interests were brought about. It is to the inventive talent and untiring energies of these two men that many of the outstanding fruit specialties of confectionery, soda fountain and ice cream fields have been largely due. Their retention in authority is looked upon by the trades as added assurance of a liberal expansion policy and continued high quality of product.

It is interesting to note that the products of both firms have been featured under the familiar "Imperial Crown" and "Crown" brands.

Making Hard Candy to An Ideal

(*Continued from page* 39)

have had the pleasure of showing many of our good friends in the candy industry through our plant. The basic plan of operation, from our observation, is the same in one plant as in another. The product varies up and down, as a general rule, in proportion to the high or low candy making ideals of the plant superintendent and the plant officials. The man whose heart is set on making a product he can be proud of usually succeeds, we find. We are quite convinced that attention to details and not any mysterious secrets is the requisite for successful operation—and that applies to all candy making as well as just to hard candy.

Springfield Continuous Cooker

Used by the most of the progressive factories; Product is drier; Has a finer gloss and will stand climatic changes better. Operation is continuous and under perfect control.

If you are not making your hard goods on THE SPRINGFIELD CONTINUOUS COOKER you are not making them the best and most economical way. Our engineer will call without obligation to you. Why not send for him?

The Modern High Vacuum Cooking Process

NATIONAL EQUIPMENT COMPANY

Springfield, Massachusetts, U. S. A.

Broadcasting by electrical transcription is writing a new chapter in advertising progress. The Candy Industry can use it and profit.

Radio Offers Candy Powerful Selling Aid

By
D. M. HUBBARD

THE more one studies spot broadcasting by means of carefully made records and discusses it with men who know radio, the more one is forced to conclude that it seems virtually made to order for the small and medium-size candy manufacturer.

It offers him: 1, coverage without waste of those particular markets where his candy is sold; 2, far higher quality programs than he himself could buy from most of the radio stations broadcasting; 3, an educational service that builds prestige for him and acceptance for his brands; 4, very low cost as compared with most advertising available to him; and 5, a means of meeting within his own particular markets the competition of larger, nationally known companies.

I am talking here, perhaps it should be made clear, about radio broadcasting in which a group of candy manufacturers cooperate. More specifically, the plan in mind is the one introduced to the industry at the National Confectioners' Association convention in June. Dramatic and impressive in its presentation then, the idea of spot broadcasting seems now, after a reasonable period of time for analysis and probing for weaknesses, to be admirably suited for the candy manufacturer.

Spot broadcasting, let it be noted in the interest of accuracy, is broadcasting without any chain hook-up either by means of especially prepared discs or by artists "in person." The discs are not the ordinary phonograph records, although this familiar type of record, not originally prepared for radio purposes, is used occasionally by some broadcasting stations. The sort of record which can be used by candy manufacturers, in case any considerable number of them decide to use that type of spot broadcasts, will be made specially for them by high-grade talent. Each program will be 15 minutes long. Besides music each will include a brief talk on candy and also make clear the identity of the individual manufacturer sponsoring the broadcast.

Record or Artist?

WHEN you switch on your radio and hear a voice say, "This program is coming to you by electrical transcription," you are listening to a spot broadcast made by a record. The words "electrical transcription" mean that the broadcast is made by means of a record rather than by an orchestra or person present in the studio.

What is your reaction? Do you as an individual accept the entertainment that follows on its merit? Or do you conclude that, since a record is being played, the program cannot possibly be of more than mediocre quality? Some of the

larger radio stations feel today that the record broadcast lacks something in spontaneity and humanness. For that reason they are unwilling to put electrically transcribed broadcasts on the air during their choice hours, say from 6 to 10 o'clock in the evening. That is one of the "outs" of this kind of broadcasting. Of course there are two sides to the story. The prospective advertiser must remember that most of the stations have numerous artists under contract whose talents they want to sell. Perhaps that fact can't help molding their opinions.

What are the facts concerning the public's reactions to the spot broadcast? The answer to that question must go a long way toward deciding the advertising value of this particular kind of broadcasting. Before trying to form an opinion let's look a little closer into some of the pertinent details.

A Good-Will Medium

ALTHOUGH it is possible actually to sell commodities and services over the radio, most stations frown on direct-selling efforts. Accordingly it has become fairly well established that radio's true function in advertising is to promote good will or public acceptance for a business and its merchandise. This being the case, two questions immediately suggest themselves. These are: (1) Does candy as a commodity and does the candy manufacturer need good will? and (2) Will skilfully prepared radio advertising produce this good will? If the answer to each of these is Yes; then the next step is to learn how to use radio effectively and most economically. If it is No, then there is nothing to be gained in discussing broadcasting for candy. Period. Paragraph. The end.

No one with anything more than the haziest knowledge of the industry would deny that candy needs all the good will today it can possibly command and needs it urgently. Not after the attacks the industry has sustained. Not in view of the ignorance and misunderstanding concerning candy so apparent still in many quarters. Nor would anyone who heeds the examples set by the keenest merchandising minds in business today seriously question the ability of persistent, well-conducted broadcast programs to deliver full value for the dollars spent. Palmolive, Pepsodent, General Motors, Shell, Everready, Clicquot Club, Armour, Interwoven, Westinghouse, Squibb, Libby, Orange Crush and Enna Jettick (to name but a few) can't all be wastrels.

Accepting these premises, there are available several forms of broadcasting. One thinks instinctively of the National Confectioners' Association, already experienced in educational and advertising work, producing a program either in New York or Chicago and putting it on the air through one of the two leading chains. One dismisses the thought rather promptly when it is learned that a single half-hour program with suitable talent broadcast over the Columbia system's basic network would cost about $5,000. The chain hook-up with the N. C. A. acting as sponsor is a pleasant idea to dally with, but it is not practicable for the best of reasons.

Probably every candy manufacturer who has a wide distribution for his products has been approached with the idea of broadcasting in his behalf either over a chain hook-up or on a more limited scale.

What Does It Cost?

AGAIN the matter of expense is an obstacle even in the cases of the few manufacturers who sell nationally. For the manufacturer who does only a sectional or regional business the difficulty of securing talent which ranks with the talent listeners are hearing through chain broadcasts seems insuperable. And no matter how long you discuss the matter of radio advertising, you can't avoid the realization that if you don't offer a good quality program you had better stay off the air and spend your money on something else. Inevitably, it seems, candy, as an industry, must turn toward the spot broadcast by means of discs as offering the particular combination of advertising advantages that candy needs right now in this year of grace, 1930.

What is this combination of advantages?

Let's answer that question by citing the hypothetical case of the equally hypothetical Jones Candy Company of Jonesport. Mr. Jones sells 90 per cent of his output in four states. His trading area is roughly comprised by a circle of 200-mile radius centering at Jonesport. There are two cities of more than 250,000 population in that area but Mr. Jones sells most of his candy outside of these cities. Competition is too keen for him within them. The Jones Candy Company would like to advertise but doesn't quite know how. It can't afford to go into the big national magazines. So far, no one has convinced Mr. Jones that the use of space, within his means, in the newspapers will pay him a profit. The possibilities of his company as an advertising account are not sufficiently glowing to attract the counsel of any of the abler advertising agencies.

On looking into the matter of a co-operative radio advertising effort, Mr. Jones discovers that he can go on the air once a week for 15 minutes at a cost of somewhere around $75.

He can have a program made in which a good-size symphony orchestra, an A-1 dance-music orchestra and a quartet participate and in which there is included a forceful, common-sense talk on candy—his company appearing as sponsor—and it costs him about $25. *That is his share of the total cost,* for some thirty-five other manufacturers go in with him to split the expense. The program is on a record, to be sure, but from his location station Mr. Jones has heard records of famous orchestras and singers that sounded just as well to him as those same orchestras and singers themselves when they went on the air. In fact, Mr. Jones, even as you and I, have heard a really fine artist occasionally give a sub-standard performance while broadcasting "in person." That never happens with a record, for the reason that the sub-standard record can be discarded before being released and another one made. It sometimes happens, too, when a fine artist is broadcasting over a chain hook-up that storms and other disturbances will prevent smooth, enjoyable transmission of the program. The perfect rendition in Chicago or New York may reach Memphis, Columbus or Denver in garbled form.

Covering the Market

NOW the station that Mr. Jones would naturally prefer to use is not an especially powerful station. However that may be, it does cover that 200-mile radius where the Jones Candy Company sells 90 per cent of its volume. And that is territory enough. As it happens, some of the other candy manufacturers who are interested in the co-operative broadcast will use more powerful stations and their pro-

grams will be heard by thousands in Jones' trading radius. Thus the knowledge of candy, its acceptance as a food and its sale receives quite an impetus that helps Jones candy and every other quality candy sold there. Suppose a spot broadcast were made from stations in the following cities on the nights indicated below. There would be no overlapping of programs on any one night but the listener in Canton, Ohio, who heard a candy program on Monday night from Pittsburgh might hear another on Tuesday from Cleveland and still another on Wednesday from Cincinnati.

MONDAY NIGHT

Boston	Denver
Pittsburgh	San Francisco
Detroit	Baltimore
Minneapolis	Houston
St. Louis	Nashville

TUESDAY NIGHT

New York	Salt Lake City
Cleveland	Seattle
Chicago	Davenport
New Orleans	Des Moines
Omaha	Atlanta

WEDNESDAY NIGHT

Philadelphia	Portland
Buffalo	Los Angeles
Cincinnati	Birmingham
Kansas City	Washington
Fort Worth	Milwaukee

The cumulative effect of staggering broadcasts in this way is self-evident. The individual manufacturers sponsoring the broadcasts would naturally profit most but the whole industry would gain in prestige.

I'm not sure as to the cost of time on the station that Mr. Jones wants to use. It doesn't run more than $50 for the 15 minutes he needs, I'm certain, having prepared radio continuity for other advertisers using this station. In view of that experience I can comment on the calibre of talent it offers. Every radio station has its own orchestras, vocalists, etc., with which it builds up programs. Outside of the larger cities this talent is decidedly mediocre, and although listeners feel a certain partisanship for their own local stations, it's common knowledge that a big percentage of them will dial a distant station known to provide high-grade programs rather than listen night after night to the same performers they have heard so many times at home.

A-1 Talent Available

WELL, Mr. Jones won't have to worry about laying that spectre. He can get talent equal to any when he and thirty or forty others sponsor a program that is electrically transcribed. Not only does Mr. Jones get superior talent but he pays less for his share of it than he would have to pay his local station for such talent as it is able to provide. I'm told that an orchestra for a 15-minute program in a city like Omaha would cost from $75 to $100. The Jones Candy Company's share of a first-class spot broadcast program will run not more than 20 per cent of that amount. It looks like a mighty fine buy for him, especially since the electrically transcribed program can be proof-read and corrected at the studio where it is made before it is released to go on the air.

I don't know how much rehearsing radio stations require of their talent but I do know that every now and again something goes sour with the program. A singer transposes his words, an announcer sputters, stumbles and mispronounces. The talent used in making records for broadcast purposes is rehearsed thoroughly. If anything goes wrong when the record is being made it is discarded and another made until one is produced that is perfect. When the record is finished, it is listened to most critically. And when it finally gets an O. K. and is put on the air, it's all but impossible to tell that it is a record, if that counts for anything.

Because of its low cost and its selectivity and because it appears to be producing wanted results, spot as contrasted with chain broadcasting, I am told, is increasing in popularity. In a very short time the American Molasses Company won distribution with 4,500 retailers for a new non-sulphur molasses, it is authoritatively said, by means of spot broadcasting. Dr. Straska's Toothpaste got requests for samples from 150,000 listeners in Cleveland and druggists got requests from 100,000 others in eight weeks' time. During this period one chain drug store alone bought 350 gross. Tastyeast is reported as having distributed 40,000 samples and received many orders by mail as a result of a four weeks' broadcast. A later broadcast over another station is bringing the company more than 3,000 letters a week.

Radio can do much for the entire candy industry for the reason that the industry needs, as a foundation for more sales and sales at a decent profit, those things that radio advertising seems peculiarly well fitted to produce. If the funds were available, broadcasting over a nation-wide hook-up by the N. C. A., as such, might be desirable. Then again it might not be. The laundry folks tried that through their national association and gave up the campaign as a costly failure.

More to the point is the promise that spot broadcasting by means of records holds for the individual candy manufacturer who has felt in the past that his hands were tied in carrying on any sizable sales promotion or advertising effort. Now he has a modern and, it would seem, highly effective means at his disposal at a cost which is within his means.

H. Q. Mills New Vice-President of Anchor and Capstan Organizations

Anchor Cap & Closure Corporation of Long Island City, New York, and Capstan Glass Company of Connellsville, Pa., have announced the election of Harry Q. Mills, formerly in charge of their West Coast offices with headquarters in San Francisco, as a vice-president of both companies.

Mr. Mills who has been associated with Anchor since 1910 and Capstan since its founding in 1918, will make his headquarters at the Anchor Cap & Closure Corporation general offices in Long Island City, N. Y. His duties, however, will include regular visits to the nineteen branch offices located in Atlanta, Baltimore, Boston, Chicago, Cleveland, Detroit, Houston, Los Angeles, Louisville, Minneapolis, Newark, New York, Philadelphia, Pittsburgh, Rochester, St. Louis, San Francisco, Seattle and Toronto, Canada, through which Anchor and Capstan customers are served.

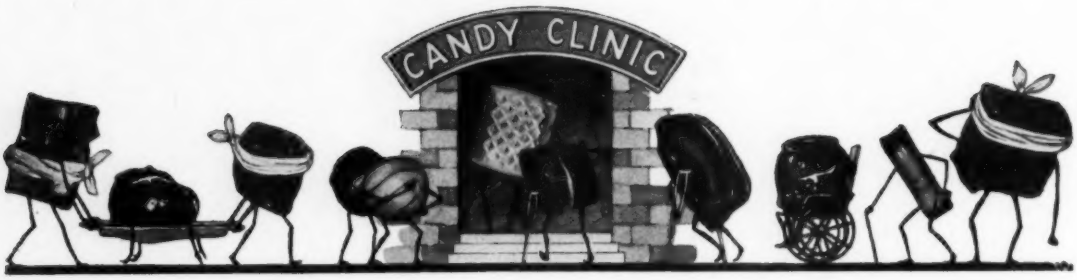
The new service which Mr. Mills will initiate is that of direct contact between the companies and their customers.

Sugar as a Patent Medicine

IN THE Middle Ages the prejudice against sugar, which had been accused of causing many ills, began to disappear. Good evidence is the following quotation from a medieval cookbook:

"Almon(d)-butter made with fine sugar and good rose-water and eaten with the flowers of many violettes is a commandable dysshe, specially in Lent, when the violettes be fragrant; it rejoyseth the herte, it doth comforte the braine, and doth qualify the heate of the liver."

What more could one ask?



The Candy Clinic is conducted by one of the most experienced superintendents in the candy industry. Each month he picks up at random a number of samples of representative candies. This month it is Hard candies and Plastic goods; next month it will be Packing and Packaging. Each sample represents a bona-fide purchase in the retail market, so that any one of these samples may be yours.

This series of frank criticisms on well-known, branded candies, together with the practical "prescriptions" of our clinical expert, are exclusive features of the M. C.

Hard Candies and Plastic Goods

Code 8A 30

Jar Chocolate Filled Hard Candy Straws—6 ozs.—25c

(Purchased in a grocery store in San Francisco, Cal.)

Appearance of Jar: Good. Square jar, screw cap with rubber gasket.
Contents: Chocolate filled straws about ¾ inch long.
Gloss: Good.
Colors: Good.
Flavors: Good.
Assortment: Good.
Remarks: This is a very good jar of strings at the price of 25c.

Code 8B 30

Jar Plastic Filled Hard Candies (no weight on jar)—about 6 oz.—40c

(Purchased in a drug store in San Francisco, Cal.)

Appearance of Jar: Good.
Gloss: Good.
Colors: Good.
Impressions: Good.
Flavors: All good except the peanut which had a rather strong taste.
Jackets: A little too thick.
Centers: Good.
Assortment: Good.
Remarks: This jar, which contained plastic filled goods, had the seal of the retail store in which it was purchased on the front, although it was apparent that the jar was the product of a large manufacturer whose name appeared on the top. The goods seemed a trifle high in price.

Code 8C 30

Filled Hard Candy—16 ozs.—60c

(Purchased in a retail grocery store in San Francisco, Cal.)

Appearance of Jar: Good.
Gloss: Good.
Colors: Good.
Impressions: Fair.
Flavors: Good.
Jackets: Entirely too thick.
Centers: Fair. A few were strong.
Assortment: Good.
Remarks: This jar of plastic goods was not up to standard but at the price of 60c the pound high grade goods cannot be expected. A few of the centers need checking up as they had a strong off taste.

Code 8D 30

Filled Hard Candy—6½ ozs.—25c

(Purchased in a general store in Yarmouth, Nova Scotia.)

Appearance of Jar: Bad. Duplex cap used.
Gloss: Completely gone.
Colors: Bad, entirely too much color used. Striping was crudely done.
Flavor: Fair.
Jacket: Entirely too thick.
Center: Tough and no flavor could be tasted.
Remarks: This candy was not up to standard. Color, flavor and centers need checking up. The stripes were very crude.

Code 8E 30

Small Assorted Drops—3 ozs.—15c

(Purchased in a general store in Yarmouth, Nova Scotia.)

Appearance of Jar: Good, Screw cap used.
Contents: Assorted small drops.
Gloss: Fair.
Colors: Good.
Flavors: Good.
Assortment: Had only two colors, white and red.
Remarks: Suggest at least two more colors be added to this assortment. This jar represents good value at 15c.

Code 8F 30

Wrapped Taffy—2 for 1c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up like a chewey taffy and wrapped.
Flavor: Good.
Texture: Too tough.
Remarks: This would be a good eating piece if made softer.

Code 8G 30

White Iced Marshmallows—5c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up of a white marshmallow, iced on top.
Flavor: Fair.
Texture: Too tough.
Remarks: This piece requires some checking; as it stands it is not a good piece.

Code 8H 30

Sugar Balls—4 for 1c

(Purchased in rural section of Chattanooga, Tenn.)

These balls were sugared.
Flavors: Fair.
Colors: Good.
Remarks: At the price of 4 for 1c this piece should sell well.

Code 8I 30

Mint Chop—1c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up like an after-dinner mint.
Flavor: Could hardly be tasted.
Texture: Good.
Stripes: Good.
Remarks: This piece should be a good summer seller. Suggest the flavor be checked up.

Code 8J 30

Jelly Beans—10 Pieces—10c

(Purchased in rural section of Chattanooga, Tenn.)

Colors: Good.
Finish: Good.
Panning: Good.
Flavors: Fair.
Remarks: These jelly beans seem high priced at 10 for 10c.

Code 8K 30

Bubble Gum Kisses—2 for 1c

(Purchased in rural section of Chattanooga, Tenn.)

Flavors: Good.
Texture: Good.
Remarks: This is one of the best bubble gums I have examined.

Code 8L 30

Hard Candy on Stick—5c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up of hard candy colored to look like an apple on stick.

Colors: Good.
Flavor: Good.
Remarks: This piece represents a novel idea. It should be a good seller.

Code 8M 30

Marshmallow Piece—3 for 1c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up of a short marshmallow star shaped on round base.

Flavors: Fair.
Texture: Fair.
Remarks: At the price of these goods no criticism can be offered.

Code 8N 30

Sucker Sticks—1c

(Purchased in rural section of Chattanooga, Tenn.)

Sticks—
Flavor: Good.
Stripes: Good.
Colors: Fair.
Remarks: These sticks are exceptionally large for a 1c seller.

Code 8O 30

Cocoanut Piece—1c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up of cocoanut paste rolled in granulated sugar.

Flavor: Fair.
Color: Too deep.
Texture: Good.
Remarks: Not up to standard for the price of 1c.

Code 8P 30

Hard Candy Fishes—5 for 1c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up on a drop roll machine in assorted colors. Mostly all grained.

Flavors: Good.
Colors: Too deep.
Remarks: At the price, these goods can be improved.

Code 8Q 30

Hard Candy Suckers—1c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made on a sucker machine in the shape of a ball.

Flavor: Good.
Color: Good.
Remarks: The shape and impressions of a baseball were very good.

Code 8R 30

Hard Candy Sucker—1c

(Purchased in rural section of Chattanooga, Tenn.)

This piece is made up on a sucker machine in the shape of a face.

Color: Good.
Flavor: Good.
Remarks: This is a good sized piece for 1c.

Code 8S 30

Panned Peanuts—1c for 19 Pieces

(Purchased in rural section of Chattanooga, Tenn.)

This piece is panned peanut colored a light brown.

Peanuts: Well roasted.
Jacket: Panning good.
Finish: Good.
Remarks: This piece deserves to be a good penny seller.

Code 8T 30

Peppermint Stick—2¾ ozs.—5c

(Purchased in rural section of Chattanooga, Tenn.)

Flavor: Fair.
Stripes: Good.
Remarks: Very little flavor could be tasted. At the price a more generous amount of flavor can be used.

Code 8U 30

Jar Hard Candy—16.4 ozs.—50c

(Purchased in a retail candy store in Reading, Pa.)

Appearance of Jar: Fair. Goods grained. Plain gold screw cap and small gold seal.
Contents: Assorted baby solid cuts.
Colors: Good except the green which was too deep.
Gloss: None. Grained.
Flavors—
Lemon: Could hardly be tasted.
Lime: Good.
Rose: Fair.
Yellow Cut: Flavor could not be detected.
Cinnamon: Good.
Violet: Fair.
Vanilla: Fair
Orange: Fair.
Assortment: Not particularly good flavors for hard candy.
Remarks: The cooking of these goods should be checked up as the candy had to be literally dug out of the jars with an ice pick. Rose and

violet flavors are not good flavors for hard candy and are seldom if ever used for this type of candy.

Code 8V 30

Jar Hard Candy—5 ozs.—35c

(Purchased in a confectionery store in Portsmouth, N. H.)

Appearance of Jar: Good. Label printed in blue and gold. Vacuum cap.
Contents: This piece is made up of peanut butter sponged in molasses with molasses jacket.
Flavor: A little off taste.
Gloss: Good.
Color: Molasses, good.
Remarks: This is a good eating piece of hard candy but the center needs some checking up.

Code 8W 30

Jar Hard Candy—11 ozs.—25c

(Purchased in a drug store in Portsmouth, N. H.)

Appearance of Jar: Good. Label printed in green and gold.
Contents: Small round white pieces of rock with centers of red hearts and diamonds, black clubs and spades.
Gloss: Mostly gone.
Colors: Good.
Flavors: Clove, anise, sassafras and lemon, all good.
Remarks: At the price this jar sold for, it hardly seems possible that any profit can be made by the manufacturer.

Code 8X 30

Cream Peppermints—1½ ozs.—5c

(Purchased in Chicago, Ill.)

Appearance of Package: Good. Printed glassine wrapper.
Contents: Old-fashioned sugar mints.
Texture: Good.
Color: White.
Flavor: Good.
Remarks: The name on this package is misleading; these are not creams but sugar lozenges.

Code 8Y 30

Jersey Cream Rolls—1½ ozs.—5c

(Purchased in Chicago, Ill.)

Appearance of Package: Fair. Crystallized cream wafers wrapped in transparent cellulose. Seal printed in blue and red.
Cream Wafers—
Crystal: Fair.
Colors: Green too deep.
Texture: Too soft.
Flavors: Wintergreen, peppermint, orange, lime and chocolate, all good.
Assortment: Good.
Remarks: These wafers were too soft, which caused them to stick together.

Code 8Z 30

Mixed Hard Candy—5½ ozs.—30c

(Purchased in a drug store in Portland, Maine.)

Appearance of Jar: Fair. Screw top vacuum sealed. Gold seal with name in black.
Condition of Goods: Fair. Considerable dust at bottom of jar.
Mixture consisted of fruit balls, chocolate filled cups, strings, small cuts tart cuts, chip and satin squares.
Colors: Good except green which was too deep.
Stripes: Fair. Some too large and not put on evenly.
Gloss: Fair.
Flavors: Good.
Workmanship: Fair.
Assortment: Not good.
Remarks: The price of 30c for this jar is high. The workmanship should be checked up. Colors, striping and cutting of pieces were not what they should be.

Code 8Aa 30

Butterscotch Drops—1⅛ ozs.—5c

(Purchased in Chicago, Ill.)

Appearance of Package: Good.
This is a butterscotch hard candy put up in a roll.
Color: Good.
Flavor: Good.
Remarks: This package should be a good 5c seller.

Code 8Bb 30

Summer Candy—2½ ozs.—10c

(Purchased in Chicago, Ill.)

Appearance of Package: Good. White transparent cellulose bag. Seal printed in yellow and blue.
Contents—
Color: Good.
Texture: A little dry.
Flavor: (See remarks).
Remarks: The flavor of this piece tasted bitter. It requires some checking up. The price seems high for this type of goods.

Code 8Cc 30

Assorted Kisses—9 ozs.—35c

(Purchased in Chicago, Ill.)

Appearance of Package: Fair. These kisses are packed in a half-pound telescope box. Cream colored paper, name in gold, and wrapper of transparent cellulose sealed on bottom. Candy packed in rows.
Candy—
Gloss: None. Partly grained.
Colors: Good.
Stripes: Good.
Flavors: Lemon, peppermint, orange, cinnamon, lime, and licorice. All good.
Assortment: Good.
Remarks: Suggest these goods be sugared as the appearance on opening of box was not particularly good. Also suggest box be wrapped in transparent cellulose or glassine. The price is a trifle high for this type of candy.

Code 8Dd 30

Hard Candy Suckers—5c

(Purchased in Chicago, Ill.)

Appearance of Pop: Fair. Partly grained and color faded.
This pop is made of red partly pulled hard candy in the shape of a face. For eyes, white drops were used. Wrapped in white transparent cellulose.
Flavor: Cherry. Good.
Texture: Mostly all grained.
Remarks: Suggest this piece be made of clear candy and not pulled. Will look better and "stand up" better.

Code 8Ee 30

Fruit Tablets—1⅛ ozs.—5c

(Purchased in Chicago, Ill.)

Appearance of Package: Very good for this type of candies. Red hinged box printed in gold.
Contents: Fruit tablets, sugared.
Condition of Goods: Good.
Flavors: Cherry, lime, orange, lemon. All good.
Remarks: This is quite a novel idea for the packaging of fruit tablets and it ought to "go over" big.

Code 8Ff 30

Chocolate Peppermints—1¼ ozs.—5c

(Purchased in Chicago, Ill.)

Appearance of Package: Good for this priced package. Folding box, printed in brown and white.
Contents: Supposed to be chocolate cream peppermints, but contents were in one solid piece. What flavor could be tasted was not good.
Remarks: Suggest this piece of goods be checked up and the centers made to stand up.

Code 8Gg 30

Crystallized Creams—1¾ ozs.—5c

(Purchased in Chicago, Ill.)

Appearance of Package: Good for this priced package. Tray container wrapped in white transparent cellulose.
Creams—
Colors: Good.
Crystal: Good.
Texture: Good.
Flavors: Vanilla, peppermint, wintergreen, lemon and maple. All good flavors.
Assortment: Good.
Remarks: This is a good looking 5c seller and the candies are of good quality.

Code 8Hh 30

Filled Hard Candy—2½ ozs.—15c

(Purchased in a retail store, Boston, Mass.)

Appearance of Jar: Good. Oval shaped with vacuum cap. Seal brown and printing in yellow and white.
Condition of Candy: Good.
Gloss: Good.
Stripes: Good.
Colors: Good.
Jackets: A trifle too thick in about 50% of the pieces.
Centers: Fair.
Flavors: Good.
Impressions: Good.
Assortment: Good.
Remarks: The profit on this jar at 15c no doubt was figured with a very sharp pencil.

Code 8Ii 30

After Dinner Mints—(no weight on bag)—10c

(Purchased in Chicago, Ill.)

Appearance of Package: Good. Transparent cellulose bag tied with lavender ribbonzine.
Mints—
Color: Good.
Texture: Good.
Flavor: Good.
Remarks: Suggest weight be printed on bag to avoid trouble.

Code 8Jj 30

Assorted Hard Candy—49c

(Purchased in retail drug store in Boston, Mass.)

Appearance of Tin: Good. Oval shaped can, friction top.
Condition of Candy: Bad. All stuck together.
Gloss: None.
Stripes: Fair.
Colors: Fair.
Assortment: All solid satin squares, cuts, strings, tid bits and pillows.
Flavors: Good.

Workmanship: Fair.
Remarks: The condition of these goods was very bad—the pieces had to be dug out of the can.

Code 8Kk 30

Assorted Hard Candy Sticks—2¾ ozs.—10c

(Purchased in a retail candy store in Reading, Pa.)

Appearance of Jar: Fair. No label, name in glass. Gold screw cap with name in black. Waxed disc in top.
Condition of Sticks: Fair. About 50% broken.
Gloss: Fair.
Colors: Good.
Flavors: Cherry, clove, peppermint, lemon, sassafras, lime. Very good.
Workmanship: Good.
Remarks: This is a good jar of sticks at the price of 10c. The profit, if any, must be very small.

Code 8Ll 30

Small Pops—5 ozs.—20c

(Purchased in a retail candy store in Reading, Pa.)

Appearance of Jar: Good. Red screw cap. Seal of blue, name printed in gold and white. Jar contained small pops on thin sticks.
Condition of Candy: Fair. Partly broken.
Pops—
Colors: Red. Some flavor used but could not tell what it was.
Orange: Orange flavor fair.
Green: Lime flavor good.
Clear: Lemon flavor fair.
Workmanship: Fair.
Remarks: This is a good way to pack small pops. Some of the flavors need checking up.

Code 8Mm 30

Assorted Checkerboard Cuts — 4 ozs.—10c

(Purchased in a drug store in Reading, Pa.)

Appearance of Jar: Fair. Large jar with plain gold top duplex cap.
Condition of Candy: Grained and all stuck together.
Gloss: None.
Colors: Good.
Flavors—
Lime: Fair.
Raspberry: Fair.
Orange: Bad.
Violet Color: No flavor could be tasted.
Lemon: Good.
Workmanship on Checkerboard: Good.
Remarks: This candy had to be dug out of jar. It was in very bad condition. Flavors were poor.

Code 8Nn 30

Assorted Fruit Tablets—2¾ ozs. —10c

(Purchased in a drug store in Reading, Pa.)

Appearance of Package: Good. Transparent cellulose bag, round board bottom, tied at top with lavender ribbonzine. Name printed on bag.
Assorted Tablets: Sugared.
Colors—
White: Tasted like grape but not a good flavor.
Green: Lime, good.
Yellow: Lemon, good.

(*Continued on page 60*)

Looking Over

The Hard Candy Market

With Eric Lehman

SOME of our retail men have been passing up real candy business during the summer months by not going in for a good line of jar hard candies. This is a very profitable part of the candy business during the warm weather. A good line of jar goods is fine for display either in the windows or on the showcases; it is easy to sell and requires comparatively little care. Display stands, window strips, etc., are furnished by many of the larger houses. Some are exceptionally attractive and will add greatly to the appeal of these displays.

In visiting a number of retail candy stores and chain drug stores we found many displays of hard candies in small ten-cent packages and in jars ranging in price from fifteen cents to fifty-nine cents. Some of the jar goods were not good. Flavors and colors offered plenty of room for improvement. In some cases it appeared as though all the coloring had been put in one batch and left out of the others. The same applied to flavoring—sometimes too much, sometimes too little; in one or two cases it was of such inferior quality that whatever flavor it was intended for could not be determined. Flavors are not so costly that a generous quantity can not be used. As we all know, flavor is one thing that will either put our merchandise "over" or put it "out." No matter how fine our hard candies may appear, if the flavors are not good and a sufficient amount used, they are a disappointing and poor eating confection.

Stripes and colors can make a very fine looking candy if a little care is taken. It is as easy to make a fine stripe as it is to make a wide, uneven one. Gloss, of course, is the final touch of beauty in a hard candy but some of the jars examined looked as though their contents had never possessed this quality. In cooking sugar on either the open fires or in vacuum pans, every care possible is needed. The "doctor," too, is very important. Any "doctor," be it cream of tartar or corn syrup, or parts of both, will make fine high gloss goods, but care must be taken in the cooking—how high it is cooked and how long the vacuum is "pulled," etc. The handling of batches on the slabs and tables also is very important. Check up your vacuum cooker and see if it is "pulling" the right vacuum, also that there is enough water going through your condenser to give the proper vacuum. If you have a good formula, check it up now and then to see if the man is following the formula or if he is cooking and "doctoring" to suit himself. I know of a case where the hard candy foreman continually complained to the engineer that he was not getting enough vacuum on one vacuum kettle. The engineer, being a new man and unfamiliar with vacuum kettles, set the vacuum gauge on this kettle one night so that it showed a perfect vacuum the next day. The goods that were cooked in this kettle, of course, did not stand up and were returned. It didn't take the foreman long to find out what the trouble was. He soon had a new engineer!

A word about acid and fruit flavors. Citric or tartaric acid are very fine when used in the right way. If too much acid is used, the candy leaves a bad taste in the mouth. Fruit flavors, such as lemon, orange, rapsberry, etc., will not "stand up" long if kept in a hot cooking room. A small amount of each flavor is sufficient to keep in the cooking rooms at a time. The main supply should be kept in a cool room, well sealed. Do not try to save money on flavors or colors, as they either "make" or "break" your hard candy—or any candy, in fact.

Plastic goods appear to predominate; the market is well supplied with them. No doubt these goods make a good display and sell well, but don't forget, many people like solid goods and other filled goods. Some of the plastic candies being sold are far from being good eating candy. The centers are hard and have little or no flavor; the colors, stripes, etc., reflect mediocre workmanship.

A number of the jars we pur-

chased seemed high priced for the amount of candy they contained. We came across others, however, that are being sold for a price at which it is impossible for the manufacturer to make a profit. Check up your jar goods. Some of them may be showing you, not a profit, but a loss!

The Candy Clinic

(*Continued from Page* 59.)

Orange: Orange, good.
Red: Tasted somewhat like cherry. Not a good flavor or not enough used.

Remarks: This makes a neat and handy package of tablets. The flavors need checking up. At the price of 10c the best flavors can be used.

Code 8Oo 30

Filled Hard Candy—4¾ oz.—25c

(Purchased in a retail store in Boston, Mass.)

Appearance of Jar: Good. Plain gold cap, vacuum sealed. Label red and cream color.
Condition of Candy—
Gloss: Good.
Stripes: Fair.
Colors: Good.
Jackets: Too thick.
Flavors: Good.
Centers: Good, but not enough used.
Impressions: Fair. Some pieces had very little impression.
Workmanship: Fair.

Remarks: This plastic work was not up to standard. The pieces ate hard and in most pieces more center was needed.

Code 8Pp 30

Small Pops—5 Pieces—5c

(Purchased in a drug store in Boston, Mass.)

Appearance of Package: Good. Five small pops wrapped in transparent cellulose fastened with rubber band. Red and white printed seal on wrapper.
Pops—
Condition: Good.
Colors: Good.
Gloss: Fair.
Flavors, Colors—
Red: Cherry, good.
Green: Lime, good.
Yellow: Lemon, good.
Orange: Orange, good.

Remarks: The flavors used in these pops were very good. The size of the pops, however, are a trifle small at the price of five for five cents.

TOO LATE TO CLASSIFY

WORKING FOREMAN ON hard candy, A-1 on satin finish and plastic filled goods. Experience on Guebel and Berten presses. D-6477, % The Manufacturing Confectioner Pub. Co., 30 N. La Sallet St., Chicago, Ill.

Sweetest Day Looms as First Major Autumn Event

WITHOUT knowing definitely how many cities and communities will promote Sweetest Day, October 18, in an organized manner and turn the resulting sales opportunities to profit, it seems assured that this year will find candy more universally accepted as a convenient and logical means of "making someone happy." More manufacturers than ever before are registering an interest in Sweetest Day as a means of speeding up fall deliveries and promoting retail buying. This year there is a growing conviction among retailers that "Sweetest Day" can be made a gift day equal to Christmas, Easter or Mother's Day.

At the office of the National Confectioners' Association, the most recent developments designed to help manufacturers to sell more candy are window strips and a band to be placed around packages. The package strip is in four colors, including gold, a promising and economical sales stimulant.

Will Choose Sweetest Girl in America

Committees in more than 100 cities will co-operate with their local newspapers in choosing a Sweetest Girl for each community. In each case she will receive an award, probably in cash. Each title winner will then be eligible for the national title, Sweetest Girl in America, the selection being made in Chicago by a committee of distinguished men and women. It should be borne in mind that neither the local nor the national selections are beauty contests. Courtesy, generosity, sympathy, unselfishness and tenderness are more important qualifications than mere physical attractiveness.

Interest in the selection of Sweetest Girl took Cincinnati by storm last year. Here the *Post*, one of the Scripps-Howard newspapers, gave the event a large amount of publicity and exploited it as part of its own promotional work. Other Scripps-Howard papers—there are 26 of them in all—will sponsor selections this year, giving individual manufacturers, their jobbers and retailers an excellent opportunity to cash in on the interest aroused.

Sweetest Day is practically the first important candy occasion after the summer season. It affords the manufacturer an opportunity to restock the retailer's empty shelves and start the flow of merchandise to the consumer.

N. A. C. Offers Promotion Materials

To make this fall sales promotion work easier and more effective, the educational and advertising staff of the National Confectioners' Association has prepared outdoor advertising posters, window strips, package inserts, special candy bags and package bands for local committees. Special publicity releases, cuts for menu use, mats for local newspaper advertising, pamphlets on candy may be had, and the motion picture, "Won by a Sweet," can be borrowed.

Lest the day be thought of as purely commercial in character, one important recommendation is being made by National headquarters. This is, that in every city where Sweetest Day is observed, some thought be given to making less fortunate people happy. That can be done by presenting candy to hospitals, homes or institutions where luxuries are rarely enjoyed and will, for that reason, be doubly appreciated.

Ft. Dodge, Ia., Plans Busy Week

At Ft. Dodge, Ia., October 13 to 18 will be Candy Week, with delegations from the Rotary, Kiwanis, Lions and other civic clubs visiting the Hy-Art Candy Company's factory each day. Following each trip through the plant, the picture, "Won by a Sweet," will be shown and a talk on candy given. All confectionery stores in Fort Dodge are to be decorated and candy will be given those in the city's charitable institutions. Fort Dodge's Sweetest Girl will be chosen by vote.

Making Sweetest Day a success is a co-operative job. A few individuals working night and day can fail where many participants, each doing a small part, will insure new prestige and larger sales for candy. The National Confectioners' Association is ready to supply manufacturers, jobbers and retailers with ideas, service and materials needed to help impress candy favorably in the public mind.

Licking Your Worst Competitor— Cost Ignorance

A Notable Series of Articles on Candy Cost-Accounting and Executive Control, Will Appear Exclusively in "The Manufacturing Confectioner"

Prepared by F. A. McGee, FAM Industrial Engineers, Official Cost Accountants for The National Confectioners' Association

F. A. McGEE.

So long as the demand for any commodity exceeds the supply, rule of thumb methods in business, guesswork and systems based on hunches often manage to survive. Their day of reckoning always comes. Usually when the pendulum swings the other way and industry finds itself producing more than its markets can conveniently absorb.

Accurate knowledge of production and sales costs are valuable at all times to the individual manufacturer who expects to control his affairs. At a time like the present they are indispensable.

Believing that there is a widespread interest among candy manufacturers, THE MANUFACTURING CONFECTIONER has arranged with Frank A. Magee, cost engineer, to publish a series of informative articles by Mr. Magee on costs in the candy industry and how they can be determined with absolute accuracy. This first article in the series appears in the next, September, issue.

Few men in his profession have done more brilliant work than Mr. Magee. His methods have been used by many of the most successful biscuit manufacturers in this country, the Biscuit and Cracker Manufacturers Association having adopted them in 1912. In 1918 Mr. A. P. Streitmann, then president of the association, asserted, "I regard the adoption of the FAM system by our association as one of the greatest steps forward our industry has ever taken." It is interesting to know the present opinion of this association, for systems which are enthusiastically adopted sometimes rust and fall into disuse quickly. At the recent convention of the Biscuit and Cracker Manufacturers Association Mr. A. J. Zimmerman, retiring president, said, "Those members who have adopted the system are more enthusiastic about it than ever."

> How many times have you heard some harassed manufacturer explosively complain that he could operate at a decent profit if only his competitors knew how to figure their costs? How many times have you, yourself, said it? And meant it.
>
> It's true. Your worst competitor is not the manufacturer who outsells you.
>
> The manufacturer for whom there is no room in the candy business is the man who guesses at his costs or who uses a cost-finding method that is inaccurate and thoroughly misleading. He undermines your business as well as his own.
>
> The MANUFACTURING CONFECTIONER believes the time has come to start an organized crusade against this menace to the industry —the manufacturer who does not know his costs of doing business.

Probably nothing could point to the existing need for more uniform and accurate cost-finding methods in the confectionery industry than to cite the case of four manufacturers in a mid-western city. Each of the four is sincere in his belief that the other three are determined to ruin the industry. Each believes the other three to be using archaic costing methods that are responsible for selling prices that leave no room for profits.

What are the facts?

Simply these. From the best authorities it appears that each of these four candy manufacturers is using a cost method that does not give him a true picture of his situation. How is it possible for healthy competition to exist on a sane basis under such conditions? What these and other manufacturers in the industry need is a uniform system that is correct in theory, a system that is relatively simple and one that has proved its value over a period long enough to satisfy every reasonable doubt as to its efficiency.

In recent years the word "control" has come to be one of the hardest-worked words in the language of business. Production plans and sales plans get nowhere unless there is control of production and sales methods. It follows that there can be no control of these methods without a true knowledge of costs. So much has won general recognition. Yet no department of accounting has been so disturbed by theories that conflicted as has cost finding. No phase of accounting has embraced so many different methods of accomplishing one result.

Due largely to the successful results achieved in the biscuit and cracker industry by the FAM meth-

(*Continued on page* 69)

Lecithin *as an* Emulsifying Agent

By Dr. Bruno Rewald

SOME substances, under normal conditions, possess the peculiar property of being split up into extremely minute particles when placed in a liquid medium. They do not dissolve, for instance, like salt does, yet the dispersion is so fine, approaching molecular magnitudes, that in many cases the particles cannot be seen even with the aid of a powerful microscope. Such substances are commonly called colloids and play an important part in the preparation of emulsions. A word of caution in regard to the word "colloid" might not be amiss: any suspension of minutely divided particles in a liquid or other medium whereby extensive surface is in contact in proportion to the mass may be termed a colloid, but ordinarily when speaking of colloids we mean particular substances, such as gelatin, starch, lecithin, gum, casein or albumin.

Systematic investigation of colloids was not undertaken until a comparatively recent date. Colloid chemistry has been called "the chemistry of neglected dimensions" for this very reason, but it has rapidly come to the front until today colloid chemistry has taken a place of equal rank among its elder sisters of the science, and its vast possibilities are being explored with undiminished interest. In no small measure, research into the field of physiological chemistry contributed to this recognition since nature was found apparently to prefer the gelatinous (colloidal) state for most of her vital organic substances. A knowledge of colloids will prove of value to the confectioner in enabling him better to understand and control his manufacture, as colloids or colloidal conditions enter into his processes at many points.

Sugar — sucrose — from cane or beet, represents a typical crystalline material with a relatively simple and exact chemical composition. By proper treatment it can be inverted into dextrose and levulose, each a separate and distinct sugar. Dextrose is well known to the confectioner and on consideration will be seen to be closely related to starch, from which it can be prepared, for instance, as in corn syrup. Starch, however, is a typical colloid without crystalline structure, thus indicating the complex nature of the colloid. Similar observations have been made in the case of albuminous materials.

These facts applied to the fats have shown that most fats can be obtained in the form of fine crystals. Witness the crystallization of cocoa butter on the surface of chocolate when graying occurs. Increasing viscosity of liquid oils as the temperature drops can be explained by crystallization of the triglycerides. One constituent of the fat, the lecithin, can not be obtained in crystal form and, like starch, it is a typical colloid. Precise distinctions between colloids and crystalline substances (crystalloids) can not always be drawn, although many physical and chemical differences exist. Effect on the freezing and boiling points, ultra-filtration and examination under the ultramicroscope are some of the methods employed to distinguish colloidal solutions from true solutions. Fats and oils are insoluble in water, while lecithin, a member of the immediate fat family, dissolves in fats and also forms colloidal solutions with water. Is lecithin, then, the "missing link"?

By its very nature lecithin is suited to be one of the most serviceable colloids employed by the confectioner. Up until a few years only animal lecithin, notably egg yolk lecithin, was available, and since the cost was naturally prohibitive from a commercial standpoint, lecithin was practically unknown except to the pharmaceutical trade where advantage was taken of its concentrated food and tonic value. At present the soy bean furnishes nearly all of the lecithin used, and its commercial utilization, as a result of recently developed methods of solvent extraction, has centered attention on its physical, that is colloidal and emulsifying, properties rather than its medicinal importance.

Egg yolk contains approximately 10 per cent lecithin (20 per cent of the dry substance). Its emulsifying, as well as other characteristics, may be attributed to the high percentage of lecithin, and the widespread and long established use of egg yolk as an emulsifier is too well known to need comment. Many centuries ago it was employed by the ancient Chinese technicians. In the case of butter, lecithin also contributes its share of the identifying properties commonly noted, materially assisting in the emulsion of fat and water. Butter normally contains some 15 per cent moisture. Since lecithin is in butter, it must necessarily have been present in the milk —often cited as the perfect emulsion. Lecithin and casein, as well as lactalbumin, are active in promoting and stabilizing this microscopic dispersion of fat globules. As a final instance — lecithin plays countless emulsifying roles throughout nature—the universal occurrence of lecithin in every living cell may be pointed out. No lecithin, no life; it is fundamentally related to all foods. In addition to being

***THIS** is the second installment of a series on Lecithin being prepared expressly for The Manufacturing Confectioner by Dr. Bruno Rewald of Hamburg, Germany. The first "The Physiological Value of Sweets with Lecithin" was published in our May, 1930 issue. Subsequent articles will appear from time to time as they are received from Dr. Rewald.*

*D. T. MacDougal, Proceedings of the American Philosophical Society, Vol. LXII, 1928, No. 1, "Substances Regulating the Passage of Material Into and Out of Plant Cells: The Lipoids."

the fatty constituent of normal cells, its peculiar colloidal action seems to regulate the transfer of material to and from the cell.*

Because it is a naturally occurring fatty substance which supplements and modifies the characteristics it has in common with the fats by exhibiting a unique set of colloidal properties, lecithin has proved of unusual interest and value. Fats alone are hard to mix with other materials. There is always the tendency to separate, especially when heat is applied. When two mutually insoluble liquids such as oil and water are intimately mixed so that one (the disperse phase) is distributed throughout the other (the continuous phase) in the form of minute globules, the system is termed an emulsion. Where the concentration of oil is fairly high the emulsion will separate into layers of oil and water unless some emulsifying agent has been added which stabilizes the emulsion by preventing the dispersed globules from running together. Lecithin exemplifies the action of an emulsifying agent in the manufacture of oleomargarine, bearing in mind that butter naturally contains lecithin. It not only facilitates the formation of a good emulsion in the churn but also imparts a smooth consistency and desirable frying properties to the finished product. In those confectionery products which have a considerable percentage of fat, the use of a fractional percentage of lecithin to improve the physical structure of the product merits consideration, especially should there be an appreciable quantity of moisture also present. In general, greatly improved results can be obtained through the proper use of an homogenizer or colloid mill where indicated.

Each year with the approach of warm weather the chocolate manufacturer faces his arch enemy—bloom. There seems to be pretty general agreement as to what fat bloom or graying is, namely, a crystalline film of fat, but what to do about it has been a vexing and costly problem. What causes fat bloom? Simply, that as the temperature continues to rise, it reaches the melting point of the lower melting point portions of the cocoa butter, which exude to the surface, and on cooling crystallize to form the too well-known gray film. Perhaps the difficulty may be attributed to the fact that the several components of the chocolate have very little in common and at the first opportunity, such as melting of the fat, start to separate. Sugar and fat are principally crystalloids and form a more or less mechanical mixture; what they require is the addition of a real, protective colloid (emulsifying agent) to unify them. Lecithin is the only colloidal material yet found that dissolves to an appreciable extent in cocoa butter.* Laboratory and plant tests have shown that this theoretical reflection can be translated into terms of practical protection against bloom at temperatures below the actual melting point of the coating. A complete solution of the problem has not been reached so far, and extensive research is still in progress, but the confectioner already has sufficient reason to regard lecithin as his strongest ally in the war against bloom, and can at the present time secure a worthwhile added measure of protection. In another way lecithin increases the resistance of chocolate to graying, that action taking place indirectly through its effect on fluidity. Note should be taken of the fact that lecithin is found in the cacao bean as well as in butterfat.

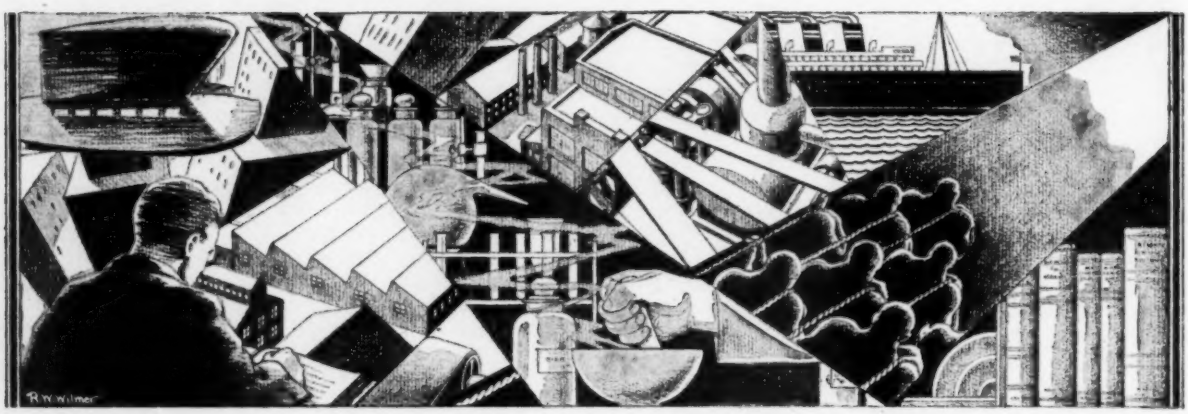
Colloidal solutions have absorbing properties supplementing their emulsifying properties. That is to say, they tend to take up fine solid particles and hold the same in suspension. In emulsions and suspensions the colloid is thought of as forming a film around each of the dispersed particles. When a cup of cocoa stands for a short time a sediment of powder collects on the bottom, the rate of settling depending, among other things, on how far pulverization of the powder has been carried. This effect is naturally emphasized the longer the cocoa stands, and may be observed more clearly in a graduate filled with freshly prepared cocoa. If a small quantity of lecithin is added to the cocoa, its colloidal action will hold the minute solid particles in suspension, making it possible for practically all of the cocoa in the cup to be consumed and thereby conveying sediment of high nutritive value which would otherwise be lost. Care should be exercised in manufacture to insure homogeneous distribution of the lecithin throughout the powder mass.

*Stroud Jordan, "Confectionery Problems," The National Confectioners' Association, Chicago, 1930, p. 32.

The Sylvania Industrial Corporation has completed agency arrangements with the Pollock Paper & Box Company of Dallas, Texas. The Pollock Company will henceforth represent the Sylvania Corporation in the southwest territory in handling sales of its transparent cellulose, Slyphrap and its recently announced moisture-proof transparent cellulose wrapping, Nymphrap.

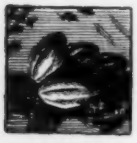
Recent sales meeting at the factory of Merckens Chocolate Co., Buffalo, N. Y., just previous to the departure of Mr. August Merckens, Sr., for Europe, where he will attend the International Congress of Chocolate Manufacturers which is to be held in Antwerp next month.

Attending the meeting were: Mr. August Merckens, Sr., president; Mr. Wm. Merckens, salesman (covering Ohio and Middle Western territory); Mr. Gardner C. Beach, salesman (covering Pacific Coast territory); Mr. O. P. Sanders, salesman (covering New England territory); Mr. Charles Decker and Mr. Charles Gleeson, salesmen (covering New York and Middle Atlantic territory); Mr. James Lawrie, salesman (covering the local Buffalo territory); Mr. W. M. Armstrong, vice president; Mr. August Merckens, Jr., Mr. Theo. H. Merckens.



Monthly Digest of CURRENT TECHNICAL LITERATURE

The World's Cocoa Market. Is Cacao Doomed?



By Harold H. Smith. Tropical Life, No. 294, p. 222.

THE author answers "yes", unless: (1) means are devised for improving the quality and quantity of the crop at the least cost to the planter; (2) and information is obtained as to whether cacao beans must be fermented or whether they can be prepared for market in a more advantageous manner both as regards cost to the planter and attractiveness to the buyer.

Consumption of cocoa powder as a beverage is rapidly declining, largely because of the crude, strong unattractive flavor of the present makes of cocoa powders. (Since cocoa powder is an essential by-product of the manufacture of chocolate coatings, this situation has an important bearing on the future trend of the price of coatings.) At the present time our knowledge stands almost at *nil* on these two points: (1) the very best method for producing on a large scale exactly the quality and flavor of cacao bean that will prove most attractive to the public in its manufactured form; and (2) the cheapest and quickest way of preparing the beans for market so that their attractive qualities may be maintained and not decrease before they reach the factory.

Packaging. Anon.

Food Manufacture, vol. 5, p. 31.

THE container serves at least four important functions; it is a convenient receptacle, a protector, a salesman, and an identification for the contents. Each function should be carefully studied in selecting packages.

Containers which can find a place in the home after being emptied of their contents, because they are drafted into service as ornaments, or as playthings for children, or as more or less permanent containers for various items, constitute one of the least expensive and one of the most direct and persistent forms of advertising. In connection with featuring products as gifts, it is stated that more than half the fruit cake produced in the U. S. is purchased for gift purposes and that its transference to the gift class has led to an enormous increase in sales.

Developments in the packing of certain foods in collapsible tubes may be expected. In Germany many foodstuffs, such as marmalade, butter, anchovy paste, cheese products and sandwich fillers are now put up in this form and the collapsible tube is no longer confined to druggists' products.

The application of paraffin wax to paper containers has extended their scope and popularity enormously and we may expect further developments of far-reaching importance. Use of new chemical products and incorporation of waterproofing material in the paper pulp prior to moulding may be expected to improve greatly the strength, transparency, appearance and impervious character of containers.

The Extrinsic Candy Box

By Paul S. Rumpel. Modern Packaging, vol. 3, p. 44.

PERHAPS the most difficult problem the manufacturing confectioner has to solve today is to offer the patrons of his product *outstanding value*—good candy that will ship satisfactorily and will retain its freshness the required length of time,—at a price that will net the dealer, as well as himself, a fair profit. Box or packaging cost enters into this calculation in no small degree. If the package could be made more attractive—perhaps more practical—some of the difficulty would vanish.

It is too early to predict whether or not this is a solution to the box problem, but it is certain that those

who have pioneered the candy-filled gift and utility box idea have cut their packaging cost and have given their sales force an incentive for larger sales. There is an ample field for developing this idea, in view of the fact that thousands of department store (and other) customers, mostly feminine, purchase *empty* boxes for special purposes.

Illustrations are given of candy boxes of several types which possess re-use value. One is a semi-circular box with partitions and compartments for darning floss, mending accessories, etc. The covering paper is lacquered and wear-resisting. Such boxes have that rare combination—intrinsic as well as extrinsic value.

One large candy manufacturer has used a four-drawer trinket box as a Mother's Day offering. What will eventually be a "make-up" box when the candy is gone is represented in a jet-black box decorated with an old-fashioned print of yesteryear. The box has a mirrored cover and compartments for creams, complexion powder, facial tissue, etc. The changing mode, from the large piece of candy to the small—dictated by the fad of dietetics—will also be reflected in the changed interiors of the newer candy boxes.

Medicinal Value of Chocolate. Anon.

Food Manufacture, vol. 4, p. 269.

THE German confectionery journal "Der Zuckerbäcker," commenting on a recent article by the German scientist Neuberger, calls attention to the fact that well known specialists of international reputation, after several years' investigation, have found that lime feeding is remarkably useful in the treatment of diseases of the heart. Therefore, the value of food containing lime in organic combination is being rapidly recognized. For this reason, chocolate products are playing a new and important role in nutrition.

Cacao has the relatively high lime content of 5.7% and the accessory materials of the chocolate industry, such as almonds, walnuts and coconut, contain 8.8, 8.6 and 4.8% lime, respectively. Obesity, in the light of this new knowledge, is a disease of the metabolism, for which reason the use of chocolate and other high lime foods is recommended in order to enrich the lime content of the blood. Subnormal lime conditions of the blood occur in conjunction with arteriosclerosis and the commoner heart troubles. (The foregoing constitutes a potent reason for more general consumption of chocolate and is of course applicable to a large proportion of the candy produced. Chocolate manufacturers and candy manufacturers producing chocolate goods will do well to bring this information to the attention of the public at every opportunity. Health is a topic of ever increasing public interest, as is shown by the space devoted to it in the newspapers, including the syndicated columns of medical questions and answers.—Editor.)

Colloids and Their Importance in Foods

II. Proteins. By W. Clayton. Food Manufacture, vol. 4, p. 251.

COLLOIDS are classed as suspensoids and emulsoids, mainly on the basis of their affinity for water. Suspensoids have little affinity and emulsoids have great affinity for water. Emulsoids such as gelatine exhibit the phenomenon of absorption of water with consequent swelling. This is a reversible action, as the swollen colloid will give up water when placed in a dry atmosphere. Swelling is influenced by the presence of small amounts of salts.

The familiar jelly or "gel" produced by dissolving gelatine in water and cooling exhibits the phenomenon of "syneresis" which is common to elastic gels at certain concentrations. This refers to the peculiar "weeping" or separation of liquid that occurs when the gels age. Thus 1% agar (Jap gelatine) gels show syneresis distinctly, a clear liquid sometimes separating in a few hours, the liquid being a solution and not pure water. (Colloids such as gelatine, agar, egg albumin and pectin which are used in the candy industry are of value primarily because of their ability to absorb water (and, in case of egg albumin, stabilize an emulsion), thus producing a desirable consistency. The stability of such candies and resistance to aging depend largely upon the rate of loss of water by the colloid used and this can be controlled to some extent by suitable precautions.—Editor.)

Avoiding Insect Infestation of Goods That Have Left the Factory

By Harry Stiner (National Biscuit Co.). Food Industries, vol. 2, p. 65.

IN spite of the precautions usually taken to destroy insect life in foods, or in certain ingredients such as nuts, the food is often infested with at least a few insect eggs when packed. The smallness of the eggs easily prevents their detection while the materials are being packed. Much study and progress in field pest control, as well as storage pest control, have been made in the last few years, and many factories and mills, realizing its importance, have so reduced their "bad goods returns" by employing one or more of the various approved methods, that their losses have become almost negligible.

When using either plain or moisture-proof cartons or boxes, sealing is always necessary to safeguard the interior against outside insect attack; and even when this is done there is no assurance that the interior will not develop an infestation from eggs that were packed with the materials. Furthermore, the chances of future contamination are greater in paper cartons and boxes than in metal containers, because of the inclination of some insects to lay their eggs on the empty carton and box stock. The effects of this insect habit are constantly appearing in many branches of the food industry, but perhaps because of the seeming improbability of its occurrence, they are not always recognized.

The only generally approved system yet developed for checking future infestation within a paper (or card board) package is fumigation with some gas toxic to insects. When the materials are properly sterilized before packing, it is quite possible to treat the cartons sepa-

rately and just previous to filling; however, when possible, the more economical practice is to pack, seal, and crate the boxes, then fumigate them just before shipping.

Fumigation methods may be classified as atmospheric and vacuum, the latter being the more rapid and producing more thorough penetration of the gas. The two gases most commonly used today for atmospheric fumigation are carbon disulfide and hydrocyanic acid. Each gas has its faults and limitations of use. The use of ethylene oxide, another gas, is still in the experimental stage. (In cases where nuts are subjected to heat sterilization in order to destroy insects and insect eggs before being used in candy, it sometimes happens that infestation develops in the candy after shipment, even though the packages are apparently tightly closed. It is possible that this may be due, in some cases at least, to the development of eggs laid on the inner surface of boxes and lids or on material used inside the boxes. In such cases heat treatment of boxes, lids, partitions, etc., would probably be beneficial.—Editor.)

Coloring and Flavoring of Chocolate Cream Centers

By R. Harold Morgan (Mgr., A. J. Caley & Sons, Ltd.). Food Manufacture, vol. 5, p. 107.

PRACTICALLY the only natural colors now used are cochineal, saffron, annatto and chlorophyll and their use is very limited. Apart from the important question of purity, the chief property of foodstuff colors, either natural or coal tar colors, is that they should be fast, particularly to sulfur dioxide, which may be present at times and to a varying extent in sugar, corn syrup, gelatine and other candy ingredients.

When using essential oils, it is of vital importance to buy a genuine article. An adulterated oil, however good and cheap it may appear to be, never gives satisfaction, for in the course of time the flavor evaporates and the centers become tasteless or, worse still, develop an obnoxious taste. Candy manufacturers would do well to use fruit juices more freely. The juices of fruits, both natural and concentrated under vacuum to preserve the flavor, give excellent results with cream and other centers. Syrup extracts, which can also be obtained as solid extracts, are forms of fruit juices preserved with sugar. Fruit aromas are the result of special alcohol and ether extractions of the fruit and are employed to "tone up" the flavor used.

The artificial group of flavors comprises those essences which are wholly synthetic and, while they may be desirable for goods cooked to high temperatures, they do not give good results in chocolate cream centers—alone, at any rate. It is difficult, in the case of a cream for instance, absolutely to disguise the taste of a synthetic essence, however cleverly the chemicals may be blended together. For cheaper centers compound essences—i. e., essences consisting of a base of natural flavor fortified with added chemicals—are often used. These very considerably, depending entirely on the skill of the blender.

Transparent Cellulose Cans. Anon.

Food Industries, vol. 2, p. 236.

PROGRESS in the production of transparent cellulose cans is shown in the development of a material termed "Hyguloid." The material is said to be odorless and flavorless. Cans made up from this transparent substance have seamless bodies cut from seamless tubes of the "Hyguloid", but the ends are of enameled tin plate.

The ends are double-seamed or crimped in the usual manner by which the ends are placed on ordinary tin cans, the seaming being done in ordinary can closing machines with but a few minor changes. The transparent walls are about 0.01 inch in thickness. They are flexible, light in weight, and will withstand considerable rough treatment. The cost of the container is not at present definitely known, since commercial production is still several months in the future. (Because of its rigidity, transparency and possibility of air-tight closure it is possible that such a can might have advantages as a container for certain kinds of candy.—Editor.)

Butter and Honey Preparations

British Patent No. 318,388 to F. B. Dehn (Honey-Butter Co., Los Angeles, Calif.). Food Manufacture, vol. 4, p. 368.

A FOOD product of the nature of butter, and formed by the intimate admixture of honey with butter or butter substitute, is made by preparing a solution of agar, gelatine, or similar blending agent, mixing this solution with honey, adding the mixture thus obtained to unmelted butter or butter substitute, and then agitating and mixing the mass at a temperature not exceeding the melting point of the fat until a solid homogeneous substance is obtained. The mixture of blending agent and honey may be heated under vacuum for the purpose of removing water and the honey may be natural or artificial.

Dummy Chocolate and Other Articles for Advertising and Display

British Patent No. 319,440 to Vicars, Ltd., and R. A. Collinge. Food Manufacture, vol. 4, p. 368.

IN order to reduce loss and expense from spoilage, replica chocolate items for display may be produced from a mixture of gutta-percha and sawdust with addition of French chalk, plaster of Paris and coloring matter as found necessary to imitate various shades. Powdered glass is used to represent sugar crystals and cream may be imitated by applying a solution of gutta-percha in carbon bisulphide. "Process white" is added to imitate icing. The gutta-percha is softened in hot water, mixed with the sawdust, and kneaded, finally being dusted with the remaining products and re-rolled.

Chocolate in the Dietary Anon.

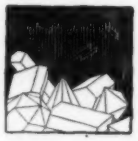
Food Manufacture, vol. 4, p. 246.

CHOCOLATE, being rich in fat, starch and protein, is a valuable food. It contains proteoses and

peptones produced from the protein during the fermentation of the beans, as well as nitrogen in alkaloidal form. Some protein is present; just how much is not definitely known and likewise little is known concerning its nature. The protein of cocoa is combined with tannin in a form which at present is not well understood.

The bromine and caffeine are both present, partly in combination and partly free. Some such combination of the coloring matter exists, but its real nature has never been determined. All we know about the aroma of cocoa is that certain trade practices produce certain results. There is a great field for the study of the effect of cultural methods on the aroma of cocoa.

Adding Mineral Salts to Candy and Sugar Products



U. S. Patent No. 1,732,492 to V. J. Andresen. Food Industries, vol. 2, p. 84.

A COLLOIDAL solution of calcium or other mineral salts is distributed in sugar, candy, or other sugar products to supply the ordinary, dietary deficiency of these substances. The fact that lime compounds suitable for such use ordinarily are not readily soluble, and consequently are difficult to distribute uniformly throughout the product, is overcome by using a lime salt of low solubility (such as calcium saccharate) together with an acid phosphate, the reaction resulting in the formation of a colloid evenly distributed in the product.

A. Donald Stewart passed away July 21st. At the time of his death he was vice-president and general sales manager of Whitefield Citrus Corporation, New York. Mr. Stewart was well known in the confectionery industry as he was at one time sales manager of Ludens, Inc.

E. A. Neuhaus, who has been associated with E. Greenfield's Sons, Brooklyn, has recently resigned. The past few years Mr. Neuhaus has been president and chairman of the board of directors.

W. N. Brunaugh passed away on the 9th of July. At the time of his death Mr. Brunaugh was sales manager of the Milwaukee Lace Paper Company, Milwaukee.

The Candy Wagoneer

AFTER the Civil War for some years the candy manufacturer was his own retailer. The larger firms used to send wagonloads of candy throughout the countryside, often taking merchandise in exchange.

Kibbe Brothers Company, established in Springfield, Mass., in 1843 (and still going strong) used to send out eight four-horse teams and wagons, loaded largely with stick candy, peppermint drops, assorted pulled candies and penny peanut sticks. New salesmen were paid $350 a year and expenses.

New Coffee Flavor Offered by D & O

The Dodge & Olcott Co. is announcing to the confectionery, ice cream and extract trades the introduction of a new coffee flavor. The new product is adaptable for cream centers, coffee syrups and coffee ice cream, imparting to these products when used alone or in conjunction with coffee percolate, extract or concentrate, a rich and lasting coffee aroma.

Noah Had His Sweets

THERE is an old tradition that the sons of Noah took with them on their travels "sweetmeats composed of wheat starch and grape juice boiled together."

Pool Car Group Meet

The Chicago Food Manufacturers Pool Car Group met at the Hamilton Club, Chicago, Saturday, July 12, 1930, and elected the following officers for the term ending January 1, 1931:

B. H. Harrison, president.
Dave Baxter, vice-president;
George R. Kane, secretary.
J. J. McVady, treasurer.

A report was made showing the progress of the "Big Ten" since its inception, January 1, 1930, and the members of the "Big Ten" were very enthusiastic and well pleased with the accomplishments of this plan to date and a very optimistic spirit prevailed at the meeting.

The "Big Ten" will hold their meetings hereafter the second and fourth Tuesday evening of each month at the Graemere Hotel, Chicago.

The Chicago Food Manufacturers Pool Car Group consists of the following members: Allison Bedford Co., canned spaghetti; Budlong Pickle Co., pickles; Chicago Macaroni Co., macaroni; Loyal Packing Co., canned meats; Oelerich & Berry Co., jams, preserves, syrups, jellies; Martin Peanut Products Corp., peanut butter; Plochman & Harrison, mustard; Stein Hall Mfg. Co., tapioca, corn starch, cocoanut; M. Wolff & Sons, olives; Allen B. Wrisley Co., soap and soap powders.

Chocolate Manufacturers on Warpath

The Association of Cocoa and Chocolate Manufacturers, representing 90 per cent of the industry, has taken up the cudgel against makers of adulterated and misbranded cocoa and chocolate.

This association subscribes wholeheartedly to the standards for chocolate and cocoa products laid down by the Bureau of Chemistry, U. S. Department of Agriculture, in Food Inspection Decision No. 191.

It feels that the sale of sub-standard products is not only unfair competition and unfair to the consuming public but also cannot fail to discredit chocolate and cocoa products in the public mind and thus react against the entire industry.

For years this association has been co-operating with the United States Department of Agriculture and the federal authorities have secured a number of convictions. However, as their control is limited to interstate business and as many of the infractions of the standards are intrastate in character the association has taken up the matter with the pure food authorities of each state and has extensive plans for suppressing the sale not only of impure chocolate and cocoa but also of improperly labeled chocolate-covered candy.

Angelus-Campfire Merge

Effective July 16, 1930, The Campfire Company and the Angelus marshmallow division of The Cracker Jack Co. became one organization.

This newest combination of major manufacturers has been a rumor for some time and brings the two leading producers of package marshmallows under one roof. It will be known as The Angelus-Campfire Company and will operate as a distinct organization and not as a division of The Cracker Jack Co. as has been the case with Angelus marshmallows for many years.

Officers of the new company will be: Paul L. Redel, president; H. A. Cole, vice-president; F. P. Warren, vice-president; F. A. Werner, vice-president; H. G. Eckstein, Jr., vice-president; E. R. Shields, secretary and treasurer; C. T. Wegner, assistant treasurer; J. A. Hafner, assistant secretary. The company offices are at 531 South Sangamon street, Chicago.

Molasses Candy

BAKERY shops in New York City sold candy fifty years ago. In 1873 a baker who used molasses for his cakes and hated to throw away the "dregs" that collected in the bottom of his molasses barrels, boiled some of it down and cut it into bars. These he gave away to purchasers of bread. He thought no one would buy molasses candy. But it soon became popular, and thus he began the first molasses-candy business. This candy was made of the old open-kettle molasses, not so easily obtained today.

Science and Confectionery

From an address by S. M. Gluckstein, a director of J. Lyons & Co., Ltd. Food Manufacture, vol. 2, p. 264.

THE functions of science in their application to the confectionery industry can be set down broadly under three main headings, viz.: (1) control and standardization of methods of manufacture, which include accurate costing and estimating; (2) improving the existing methods of manufacture and production—i. e., doing old jobs in better ways; (3) giving the manufacturer new ideas and teaching him how to develop some new lines—i. e., suggesting new jobs to be done. Several illustrations under these three headings are given in their application to the business of J. Lyons & Co.

What Americans Eat

Anon. Food Industries, vol. 1, p. 435

IN THE fact-finding survey of post-war developments conducted by the National Bureau of Economic Research and interpreted by the Committee on Recent Economic Changes of the President's Conference on Unemployment, the opening chapter is devoted to consumption and the standard of living. The summary of the present situation, in terms of tendencies merely, is to the effect that there have been declines in our consumption of cereals, notably wheat and corn, with accompanying increases in the consumption of dairy products, vegetable oils, sugar and miscellaneous vegetables and fruits.

Our consumption of sugar in all forms is now well over 110 lbs. per capita. Bread, cake, ice cream and confectionery make use of constantly increasing amounts. Since 1888 we have more than doubled our per capita consumption, the increase since the last pre-war years being about 25 per cent. The present use of sugar is regarded favorably as to palatability, economy of energy, lack of wastage and healthfulness. In brief, the present diet, at least for city dwellers, may be termed the best in the history of the country.

Canadian Candy Industry Plans Advertising

The Canadian candy industry will in all probability start a co-operative advertising campaign early in 1931. At the time of the annual convention of the Confectionery, Biscuit and Chocolate Industries of Canada, held at Montreal in June this year, the delegates heard Mr. C. J. Nadherny of the National Confectioners' Association, who outlined the work and told of some of the results of the United States campaign. The Canadian association has been carefully studying the N. C. A. campaign for the past few years, and after Mr. Nadherny's speech it was decided to investigate the possibilities of a Canadian campaign.

At a subsequent meeting of the executive committee an advertising committee was appointed to go into the matter and bring in recommendations with the tentative idea that a campaign will be launched early in 1931. This is to allow subscribers to make arrangements for their money contributions out of 1931 advertising appropriations.

It is not possible to say, at this time, to what extent the Canadian campaign will follow the ideas and plans of the N. C. A., but it is a fact that the United States advertising and educational work, as it is at present constituted, has made a great impression on the leading Canadian manufacturers.

The Advertising Committee appointed is composed of Ed. Littler of W. M. Lowney Company, Limited, Montreal; R. P. Smith of Wm. Neilson, Limited, Toronto; R. R. Furlong of Rowntree & Company, Limited, Toronto; with Wilfred Reeves, editor of the Association's Journal, as secretary.

The committee will meet early in September.

New Cerelose Manual Ready for Distribution

The "Cerelose" Handbook," which is the latest addition to candy literature, is now ready for distribution according to an announcement made by Corn Products Refining Company. This work strikes a new note in reference textbooks and is unique in its method of approach. A highly technical subject has been deftly handled in a straightforward, conversational style that not only clearly explains the intricate structure of dextrose but gives a thorough exposition of its application to the candy industry. A separate section devoted to practical formulas for making a wide variety of popular candies with the use of Cerelose (refined dextrose) will be of particular interest to factory superintendents.

In the preparation of this manual, Corn Products Refining Company enlisted the services of A. A. Lund and Associates to present their story with the viewpoint of the user in mind. That this has been done to a surprising degree is immediately apparent to the candy man and he will be quick to realize the value of the new and tested applications of this comparatively new sugar. The publication of the "Cerelose Handbook" follows out the line of development which was pioneered by THE MANUFACTURING CONFECTIONER during the past two year's presentations of Mr. Krno's articles.

Paper Shell Pecans

THE original mother tree of all the paper shell pecans in America is said to be in Pascagoula, Miss. Ninety years ago, so the tale runs, a Spaniard came to America looking for the pot of gold which Europeans always expect to find in this country.

He settled in Mississippi and his particular pot of gold was the nut tree which he found growing wild on his plantation. Liking the taste of the nuts, he cultivated it until he had a grove. As each of his children married he gave them a tree for a wedding present. Thus the famous paper shell pecan got its start.

The largest pecan tree in the world is now at Hohen Solms, La. This tree is twenty feet in diameter at breast height. Its average output is 13 barrels per year, each barrel holding 135 pounds.

Accidental Candy.

ACCIDENT has played its part in the development of candies as in other lines of human endeavor. Peanut brittle was entirely the result of accident—a happy one, most people would say.

About 1890 a New England woman, whose name has been forgotten, was making peanut taffy in her kitchen. The candy was cooking when she discovered that she had not put any cream of tartar in the mixture. Without it, the mix would not harden.

She seized a bottle which she thought contained cream of tartar, and poured some into the peanut taffy. But the bottle contained baking soda. The candy came out harder than usual, with little puffed-up splotches of baking powder all over it. Peanut brittle has been a heavy seller ever since.

Licking Your Worst Competitor

(*Continued from page* 61)

od of cost accounting, evolved by Mr. Magee, the National Confectioners' Association has decided to recommend its use to members of the N. C. A. That, we believe, is a progressive step and one that will have far-reaching effects. Few manufacturing concerns need to know their costs more than those in this industry. Perhaps the adoption by a representative group of manufacturers of a uniform costing system will be the first move toward a new era when the earnest efforts of a majority to operate on a live-and-let-live basis will no longer be balked by a few who prefer giving candy away to selling it at a fair profit.

In any event, for ourselves, we welcome Mr. Magee to a group of contributors which we feel may be fairly called distinguished for their efforts in behalf of the industry. Readers of THE MANUFACTURING CONFECTIONER may look forward confidently to enjoying Mr. Magee's series of articles. That they will be informative without being technically dull goes without saying.

An Accounting Course in Vacationland

Co-operating with the National Confectioners' Association, FAM Systems of Chicago have planned a special course in cost accounting in candy plants to be held from Sept. 6-28 at Eagle River, Wis. Thus for three weeks accountants from various manufacturing confectioners' organizations will attend lectures and solve cost problem in a North woods environment. The aim is immediately to familiarize these men with the FAM cost-finding method which has just been recommended as a simple, uniform and accurate system by the N. C. A.

The present chaotic price situation within the candy industry has been caused by the use of varying methods of cost accounting, Mr. F. A. Magee, originator of the FAM system believes. Many of these methods are so incorrect as to mislead their users into pricing merchandise.

Eager to hasten the adoption of a uniform cost finding method throughout the industry, the N. C. A. finally selected the FAM method. It has been used for 18 years by the biscuit and cracker industry, during which time it has received the hearty endorsement of many manufacturers in this field. The summer camp school was decided on as the most economical and attractive way to introduce the FAM method to the candy industry.

Classes will be conducted daily from 8:30 in the morning to noon and from 1 to 4 in the afternoon, with three written examinations during the course. In addition to Mr. Magee, Fred D. Barney and Arthur H. Wiedeman will conduct the lectures. Prof. Thomas R. Hough of the Northwestern University faculty will conduct the review work.

Facilities for golf, swimming and fishing exist at Eagle River and there will be ample time for these vacation sports, although the school hours and curriculum will be followed rigidly. During their stay at Eagle River, which is one of the finest vacation spots in Wisconsin, the men attending the course will live in cabins. The lecture hall is situated in a pavilion at the water's edge.

To confectioners who are members of the N. C. A. the cost of the three weeks' course is $275 per enrollment, which includes railroad fare and Pullman fare to and from Chicago to Eagle River and return, tuition, text books, school supplies, board and lodging. The fee for non-members of the N. C. A. is $325, which automatically pays a year's dues in the N. C. A.

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